Rigged Hill Windfarm Repowering

Technical Appendix A2.1: Scoping Report

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Scoping Request

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Executive Summary

Introduction and Site Description

1. The existing operational Rigged Hill Windfarm was developed and constructed by RES and B9 Energy Services in 1994, and then acquired by ScottishPower Renewables, who now own and operate the site. Rigged Hill Windfarm is located approximately 6.2 kilometres (km) south-east of Limavady in Derry / Londonderry and consists of ten Nordtank 500 kilowatt (kW) turbines, which can produce up to five megawatts of clean renewable energy. To date, Rigged Hill Windfarm has made an important contribution to Northern Ireland's Renewable Energy targets and low carbon objectives, and the Applicant is seeking to secure and build on this contribution by proposing to 're-power' the Operational Rigged Hill Windfarm.

Windfarm Repowering

2. The repowering of a windfarm involves the removal of existing wind turbines from a site and replacing them with new and more efficient turbines. This process normally results in an increased overall site generating capacity and output as well as generally reducing the total number of turbines within the site.

3. Repowering a windfarm supports an ongoing use of the Site by a renewables asset which is vital to Northern Ireland maintaining and building upon its renewable energy and climate change targets, as outlined in the Strategic Framework for Northern Ireland[1]. Repowering also presents an opportunity to sustain and create additional jobs and to encourage continued investment in the renewable energy industry in Northern Ireland. The repowering of a windfarm differs from that of developing a greenfield site as the area has previously been developed, has demonstrated its suitability for use as a windfarm site, and will continue to be used for the same activity. As a result, the consenting and EIA process can draw on any information already available for the site to assess effects.

4. The Operational Rigged Hill Windfarm is consented in perpetuity, and the repowering of the site with more efficient machines with greater capacity, will maximise the benefits of re-using an existing site whilst minimising new environmental effects. Operating for a longer period will also enable the Applicant to continue to drive down the overall cost of energy benefitting the Northern Irish consumer and provide opportunities to incorporate emerging technologies such as battery storage.

5. The Applicant and independent technical consultants have been involved in developing, constructing and operating repowered windfarms across the United Kingdom and have a good understanding of the key planning and environmental sensitivities associated with this type of development.

Purpose of the Scoping Request

6. The aim of the scoping process is to identify key environmental issues at an early stage, to help determine which elements of the proposal are likely to cause significant environmental effects and to identify elements that can be 'scoped out' of the assessment. Comments are invited from the consultees listed in **Section 14** of this Scoping Request as well as any other interested parties, as to the scope of the Environmental Statement and the methodologies proposed for use in the technical assessments.

[1] Department for the Economy (2010) Strategic Framework for Northern Ireland. Available online at: https://www.economy-ni.gov.uk/publications/energy-strategic-framework-northern-ireland [Accessed on 27/06/2017

7. Following preliminary consultation with key consultees, desk based assessments, site visits and field surveys and in line with The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 ('the EIA Regulations'), this Scoping Request aims to focus the assessment solely on those elements likely to provide a significant effect and identify those topics / factors which can be scoped out as the effects are not likely to be significant. **Table A** below provides a summary of effects that are deemed to be not significant and therefore will not be considered further within the Environmental Statement for the repowering of Rigged Hill Windfarm. The evidence, on which these decisions have been based, is described within each technical section of this Scoping Request.

Table A. Technical Topics which can be scoped out as Not Significant

Technical Area	Elements to be Scoped Out of the EIA
Landscape and Visual Amenity	• All Landscape Character Areas beyond 15 km of the site; • Nine Landscape Character Areas within 15 km of the site • The Giants Causeway and Causeway Coast World Heritage Site; • Causeway Coast Area of Outstanding Natural Beauty; • Areas of High Scenic Value within Derry / Londonderry area; • Registered Gardens and Supplementary Sites beyond 20km; • Seven Registered Gardens and Supplementary Sites within 20km; • Settlements beyond 20 km; • Five Settlements within 20 km; • Rail and road routes beyond 10 km; and • Regional and national cycle routes and links beyond 15 km.
Ecology	• Upland acid grassland and improved grassland habitats; • Any rare or protected flora; • Badgers and other terrestrial mammals within the Site; • Common lizards and smooth newts; • Marsh fritillary butterflies or any other protected / priority invertebrates; and • Indirect effects on fisheries and aquatic fauna.
Ornithology	• Collision risk modelling for golden plover; and • Effects on curlew populations.
Noise	• Low Frequency Noise; and • Amplitude Modulation.
Archaeology and Cultural Heritage	• Indirect effects on heritage assets not within the Zone of Theoretical Visibility.
Access, Transport and Traffic	• Operational traffic assessment.
Hydrology, Hydrogeology, Geology, Soils and Peat	• Private water supplies; and • Receptors beyond 10 km of the Site.
Tourism, Recreation and Socio-Economics	• Direct effects on tourism and recreation receptors (with the exception of the Ulster Way and Cam Forest).
Other Issues	• Turbine reflectivity; • The vulnerability and resilience of the development to climate change effects; and • Waste.

8. It is anticipated that, as further information becomes available following the completion of the survey work and refinement of the design, there may be potential to scope out additional elements/topics prior to the submission of the Environmental Statement (see **Table B**). This would only occur following direct consultation and agreement with the relevant consultees.

Table B. Technical Topics with the potential to be scoped out as Not Significant following further consultations and/ or layout refinement

Technical Area	Elements with the potential to be Scoped Out of the EIA following further consultation and/ or layout refinement
Landscape and Visual Amenity	• It may be possible scope out further receptors. This will be based on final layout design and further assessment.
Ecology	• No further elements to be scoped out.
Ornithology	• Subject to further assessment it may be possible to scope out additional elements, this will be based on layout refinement and further assessment. This includes: • Red grouse; • Snipe; • Curlew; and • Goose / Swan flights.
Noise	• Detailed Construction Noise Assessment. • The location of the battery storage facility will be sensitively sited taking into account any identified separation distances to ensure no significant effects. It is therefore anticipated that the resulting noise levels will be sufficiently low as to allow the facility to be scoped out.
Archaeology and Cultural Heritage	• Known archaeology will be avoided during site design, where possible, following confirmation of all infrastructure elements of the Development. • The assessment of indirect effects on Nationally Designated Sites (Listed Buildings and Scheduled Monuments) that are within 5 km and fall within the Zone of Theoretical Visibility (ZTV) will be considered. For the purposes of evaluating indirect effects upon the setting of heritage assets, designation status and proximity to the Development, where it is also within the Zone of Theoretical Visibility (ZTV), will be the determining attributes for whether further assessment is required. The final list of assets requiring assessment will be agreed during consultation.
Access, Transport and Traffic	The following potential effects may be scoped out subject to the defined routes and identified management measures considered within the ES: • Hazardous Loads; • Pedestrian Delay; • Visual Effects; • Air Quality; and • Severance.
Hydrology, Hydrogeology, Geology, Soils and Peat	• No further elements to be scoped out..
Tourism, Recreation and Socio-Economics	• Should further tourism receptors be identified within 10 km of the Site Boundary as part of the ongoing desk based assessment and consultation process these will be considered in terms of direct and indirect visual effects. These may be scoped out of further assessment should these effects be considered not significant.
Other Issues	• All telecoms links beyond stated buffer distances from the final turbine positions will be scoped out of the assessment. Telecoms links serving the Operational Rigged Hill Windfarm will be discounted and scoped out of the assessment. • At the time of writing consultation with infrastructure providers has not been concluded, once all information from the providers has been collated it may be possible to scope out effects on television and other infrastructure. • Human Health Impact Assessment following completion of technical assessments including traffic, noise, shadow flicker and residential amenity. • Should no properties lie within 10 rotor diameters and 130 dress of north of the turbine positions, with windows facing the Development, potential shadow flicker effects would be scoped out • It is anticipated that the Development will not cause a significant effect on aviation interests.

Technical Area	Elements with the potential to be Scoped Out of the EIA following further consultation and/ or layout refinement
	The scope of any aviation impact assessment, if required, will be based on the outcome of consultation discussions with the relevant aviation consultees.

Terminology

Table C summarises the key terms (unless otherwise redefined in a Technical Section) used throughout this Scoping Request.

Table C: Key Terms and Definitions

Term	Definition
The Site	Refers to all land that falls within the red line boundary identified in **Figure 1.1** of Appendix B.
The Site Boundary	Refers to the red line boundary as identified within **Figure 2.1** of Appendix B.
Operational Rigged Hill Windfarm	Refers to the existing Rigged Hill windfarm at the Site which has been operational since 1994.
The Development	Refers to the application for the repowering of the Operational Rigged Hill Windfarm the details of which are set out within **Section 3: Proposed Development** of this Scoping Request.
Survey Areas	Refers to areas within which surveys are undertaken. These are specifically defined within each technical section.
Study Areas	Refers to areas which are considered as part of the assessment process. These are specific and defined within each technical section.
Indicative Developable Area	Refers to an indicative area within the Site Boundary where turbines may be located, as shown in **Figure 1.2** of Appendix B.
The Council	Refers to the Causeway Coast and Glens Borough Council.

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Rigged Hill Windfarm Repowering

Scoping Request

1 Introduction

1.1 Purpose of the Scoping Request

1. This report constitutes the request for a Scoping Opinion in respect of an application for planning permission to repower the currently Operational Rigged Hill Windfarm ('the Development') by Limavady in Derry / Londonderry, Northern Ireland. The location is shown on **Figure 1.1** of Appendix B. This Scoping Request has been prepared by Arcus Consultancy Services Ltd ('Arcus') with input from independent specialist consultants, on behalf of ScottishPower Renewables ('the Applicant').

2. Based on the site area, potential turbine capacity, and what is currently known about the onsite environmental and technical constraints, it is believed that the installed capacity of the Development will be less than 30 megawatts (MW), and therefore an application for planning permission will be under the provisions of The Planning Act (Northern Ireland) 2011. It is anticipated that this application will require an Environmental Impact Assessment ('EIA') under Schedule 2 of The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 ('the EIA Regulations'). The findings of the EIA will be presented within an Environmental Statement ('ES') which will accompany a planning application to be submitted to the Causeway Coast and Glens Borough Council ('the Council').

3. The aim of the scoping process is to identify key environmental issues at an early stage, to help determine which elements of the proposal are likely to cause significant environmental effects, and to also identify elements of the EIA that can be 'scoped out' of the assessment. Comments are invited from consultees listed in **Section 14** of this Scoping Request and any other interested parties as to the scope of the ES and the methodologies proposed for use in the technical assessments.

1.2 The Applicant

4. ScottishPower Renewables ('the Applicant') is part of the Iberdrola Group, a world leader in clean energy with an installed capacity of over 28,000 megawatts (MW) and the leading wind energy producer worldwide. The Applicant is at the forefront of the development of the renewables industry through pioneering ideas, forward thinking and outstanding innovation which in turn drives economic success.

5. The Applicant is helping to drive the Iberdrola Group's ambition of being the Utility of the Future and, by the end of 2017, they will have 40 operational windfarms producing over 2,500 MW of cleaner energy, including two offshore windfarms. All of the Applicant's operational windfarms are managed through their innovative and world leading control centre at Whitelee Windfarm in Scotland.

6. The Applicant has a long standing interest in Northern Ireland and currently owns and operates five onshore windfarms in the Country (Rigged Hill, Corkey, Callagheen, Elliots Hill and Wolf Bog Windfarms). Through their established presence in Northern Ireland, the Applicant has contributed over £200,000 of community benefits, contributing to a variety of groups and organisations including donations made to and managed by the Fermanagh Trust and funding for local primary schools.

7. Through their offshore windfarm interests, the Applicant was involved in the construction of a £50 million bespoke facility at Belfast Harbour, creating the first purpose built offshore wind installation and pre-assembly harbour in the UK and Ireland and supporting up to 300 jobs in the process. The Applicant is also progressing East Anglia ONE Offshore Windfarm towards construction, and earlier this year Lamprell, in partnership with Harland and Wolff, were awarded a significant foundation fabrication contract. The value of this contract is circa £30 million providing over 420,000 person-hours. The average labour force will be 200 people across the duration of the project with a peak of around 350 jobs.

8. As the UK's leading onshore wind developer, the Applicant is keen to be a good neighbour and to maximise the local benefits that can be created in the communities where they operate. To date, the Applicant has contributed over £20 million in community benefit to enable communities surrounding onshore windfarms to deliver initiatives across the UK.

1.3 The Operational Rigged Hill Windfarm

9. The Operational Rigged Hill Windfarm, operated by the Applicant, consists of ten 500 kilowatt (kW) Nordtank turbines with a tip height of 57 metres (m) and associated infrastructure including access tracks, control building and a meteorological mast. Based on over 20 years operational experience, Rigged Hill Windfarm is a valuable, high performing operational asset. The site has recorded wind speeds suitable for long term wind generation.

10. The Operational Rigged Hill Windfarm holds a planning consent in perpetuity. Whilst the 'in perpetuity' consent is unusual for a windfarm, the most recent Scottish Planning Policy published in 2014, advocates that "*Areas identified for wind farms should be suitable for use in perpetuity.* [2]" Whilst not directly applicable to Northern Ireland, this is the most recent policy published within the UK policy context, and indicates a generally supportive framework for repowering of existing developments to ensure that the use of a suitable site is sustained.

11. The Operational Rigged Hill Windfarm employs permanent staff responsible for daily maintenance and running of the windfarm. In addition to this, local firms hold contracts for ongoing civil, electrical and general site maintenance. Further information relating to existing contracts and employment opportunities is provided in **Section 12: Tourism Recreation and Socio Economics**.

1.4 Principles of Repowering

12. The repowering of a windfarm involves the removal of existing wind turbines from a site and replacing these with new and more efficient turbines. The benefit of undertaking this process is an increased overall generating capacity and output as well as a reduction in the total number of turbines within the site.

13. Repowering a windfarm site offers the ongoing use of the Site by a renewables asset which is vital to Northern Ireland maintaining and building upon its renewable energy and climate change targets, as outlined in the Strategic Framework for Northern Ireland[3]. Repowering also presents an opportunity to sustain and create additional jobs and to encourage continued investment in the renewable energy industry. This has already been demonstrated through the award of large construction contracts, such as those at Belfast Harbour, which utilise and build upon the existing skills base already present in Northern Ireland to serve both local projects and those further afield.

14. Repowering a windfarm site differs from developing a green-field site as the area has already been successfully developed and proven to be suitable for windfarm development. As it will continue to be used for the same activity, the consenting and EIA process can draw on any information already available for the site to inform and assess effects.

15. As well as the inherent benefits of creating and expanding upon the existing mix of renewables in Northern Ireland's electricity system, repowering offers a number of major opportunities:

- Increased site generation;
- Reduces dependency on fossil fuels resulting in lower carbon dioxide(CO_2) emissions and output;
- Reduced number of turbines, utilising the latest turbine technology, sustaining and growing the level of renewable energy in Northern Ireland;
- Sustains existing development and construction jobs and creates opportunities for new supply chain jobs;
- With a supportive planning framework, it can help create a long-term, stable investment platform for a clear pipeline of repowering projects, easing pressure on consenting authorities; and
- Utilises over two decades of industry knowledge to inform and improve the siting, design and construction techniques to create more efficient projects.

[2] Paragraph 170, Page 6, Scottish Planning Policy, June 2014, http://www.gov.scot/Publications/2014/06/5823/6
[3] Department for the Economy (2010) Strategic Framework for Northern Ireland. Available online at: https://www.economy-ni.gov.uk/publications/energy-strategic-framework-northern-ireland [Accessed on 27/06/2017]

16. To date, the Applicant has experience of developing, construction and operating repowered projects throughout the UK, including Carland Cross Windfarm in Cornwall, Coal Clough Windfarm near Burnley and Llandinam Windfarm in Wales.

17. The Operational Rigged Hill Windfarm is consented in perpetuity, and the repowering of the windfarm with more efficient machines, will maximise the benefits of re-using an existing site whilst minimising new environmental effects. Operating for a longer period will also enable the Applicant to continue to drive down the overall cost of energy with benefits to the Northern Irish consumer and provides opportunities to incorporate emerging technologies such as battery storage.

2 Environmental Impact Assessment

1. Environmental Impact Assessment (EIA) is a legal requirement for certain types of development. In determining the EIA requirement for wind turbine developments of less than 30 MW capacity, the decision on whether or not an EIA is required is delegated to local authorities. Under Schedule 2 of The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 ('the EIA Regulations'), the Development falls under subsection 3(j): *"Installations for the harnessing of wind power for energy production (wind farms)', where: '(i) the development involves the installation of more than 2 turbines; or (ii) the hub height of any turbine or height of any other structure exceeds 15 metres*." Given the scale of the Development and the potential for significant effects to occur as a result of the Development, the Applicant has elected to undertake an EIA without seeking a screening opinion from the Council.

2. Schedule 4 of the EIA Regulations details what information is required to be included within the Environmental Statement (ES) and states:

3. "*3. A description of the relevant aspects of the current state of the environment (the "baseline scenario") and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of relevant information and scientific knowledge*.

4. *4. A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape*."

5. The results of the EIA will be presented in an ES which, as prescribed in the EIA Regulations, is required to include a *"description of the likely significant effects"* of the Development; effects which are not considered to be significant do not need to be described. It is therefore necessary for the scope of the EIA to be appropriately and clearly defined to ensure that any likely significant effects are identified, described and assessed.

2.1 Scope of the EIA

6. In line with the new EIA Regulations which came into force in May 2017, the purpose of the Scoping Request is to ensure that the EIA focuses on only those issues which are likely to give rise to significant environmental effects and to 'scope out' those aspects that will not.

7. In light of this we have sought to advance the collation of baseline information, by undertaking early stage consultation, field surveys and desk based assessment for each technical area shown below. The findings are described in the following sections of the Scoping Request, and together with professional judgement, form the basis of the recommendation to 'scope in' or 'scope out' each element of the assessment.

8. This Scoping Request provides details of the technical assessment areas proposed for inclusion within the ES, which will meet the information requirements set out in Schedule 4 of the EIA Regulations, and provide an evidence base to support the case for 'Scoping Out' those aspects which can be assessed at this stage as not likely to give rise to significant environmental effects. These assessment areas are detailed in **Sections 5 to 13** of this Scoping Request, and comprise of the following:

- Landscape and Visual Amenity;
- Ecology;
- Ornithology;
- Noise;
- Archaeology and Cultural Heritage;
- Access, Transport and Traffic;
- Hydrology, Hydrogeology, Geology, Soils and Peat;
- Tourism, Recreation and Socio-economics; and
- Other Issues.

9. Baseline information has been gathered, or is in the process of being gathered through a combination of consultation, field surveys and desk based assessment for each of these technical areas. The results of which are described in the following sections. These results, together with professional judgement form the basis of the recommendation to "scope in" or "scope out" each element of the assessment.

10. It is anticipated that, as further information becomes available following the completion of the survey work and refinement of the design, there may be potential to scope out additional elements of the assessment. This would only occur via the ongoing consultation process, and agreement with the relevant consultees.

11. A summary is provided at the end of each assessment area confirming which topics/elements are to be included with the ES, those with the potential to be scoped out at a later stage, and those which can be scoped out of any further assessment at this stage.

2.2 Approach to the EIA Process

12. As stated previously, EIA is an iterative process aimed at identifying and assessing the potential effects arising as a result of a proposed development. The initial stage is avoidance through design (embedded mitigation), whereby the Applicant will use the information gathered, to avoid locating infrastructure in sensitive areas. Where significant effects cannot be avoided, suitable mitigation measures to reduce or offset these will be proposed. In addition, the EIA can be used to identify potential enhancement measures that could be applied to maximise beneficial effects.

13. In this case, the Operational Rigged Hill Windfarm has been operating for over 20 years and holds a consent in perpetuity. Therefore the baseline scenario for the EIA is not that of an undisturbed greenfield site. The baseline includes the land use conditions at the current time. This incorporates all existing site infrastructure, access tracks, hardstandings, cables, substation building as well as the wind turbines and foundations as well as the current land use management. The assessments will therefore use "with windfarm" as the current baseline.

14. The main steps of the EIA process are broadly summarised as follows:

- **Scoping**: The Scoping Opinion from the Council will be used to inform and focus the scope of the EIA on likely significant effects that could be anticipated to occur as a result of the Development;
- **Baseline studies**: Desk-based assessment, baseline surveys and site visits will be undertaken, where appropriate, in order to determine the baseline conditions of the environment and area that may be affected by the Development;
- **Predicting and assessing effects**: Potential interactions between the Development and the baseline conditions will be considered. The nature of the effects, e.g. direct or indirect; positive or negative; long, medium or short term; temporary or permanent, will be predicted and assessed. Potential cumulative effects arising from Development in conjunction with other operational, under construction, consented or application stage developments will also be considered;
- **Mitigation and assessment of residual effects**: Potential effects will be avoided or reduced wherever possible through embedded mitigation. Where this is not possible, operational mitigation or other measures to reduce and/or offset any remaining significant effects will be proposed. The residual effects will then be assessed to determine any effects predicted to remain significant following implementation of the recommended mitigation measures; and
- **Production of the ES**: The process and results of the EIA will be set out in the ES.

2.2.1 Assessment Methodology

15. In order to assess the potential effects arising from the Development, the significance of such effects will be determined. The determination of significance relates to the sensitivity of the resource or receptor being affected and the magnitude of change as a result of the effect. The assessment of effects will combine professional judgement together with consideration of the following:

- The sensitivity of the resource or receptor under consideration;
- The magnitude of the potential effect in relation to the degree of change which occurs as a result of the Development;
- The type of effect, i.e. adverse, beneficial, neutral or uncertain;
- The probability of the effect occurring, i.e. certain, likely or unlikely; and
- Whether the effect is temporary, permanent and/or reversible.

16. A generalised methodology for assessing significant effects is detailed below, however each individual technical area will have a specific assessment methodology which may vary from that detailed in the following subsections.

17. It is proposed to continue the 'in perpetuity' nature of the existing consent, Therefore the assessment of all technical areas considers the effects of the operational phase of the Development, without time limitations. Should decommissioning of the Development be required, it is considered that the effects resulting from this activity/phase will be less than those resulting from the combined decommissioning/ construction phase associated with the removal of the Operational Rigged Hill Windfarm and the construction of the Development, and as such this decommissioning phase has been discounted from further assessment.

2.2.1.1 Sensitivity of Receptors

18. The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement.

Table 2.1 details a general framework for determining the sensitivity of receptors. Each technical assessment will specify their own appropriate sensitivity criteria that will be applied during the EIA and details will be provided in the relevant ES Chapter.

Table 2.1: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is low environmental value, or local importance.
Negligible	The receptor is resistant to change and is of little environmental value.

2.2.1.2 Magnitude of Effect

19. The magnitude of potential effects will be identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

20. General criteria for assessing the magnitude of an effect are presented in **Table 2.2**. Each technical assessment will apply their own appropriate magnitude of effects criteria during the EIA, with the details provided in the relevant ES Chapter.

Table 2.2: Framework for Determining Magnitude of Effects

Magnitude of Effects	Definition
High	A fundamental change to the baseline condition of the asset, leading to total loss or major alteration of character.
Medium	A material, partial loss or alteration of character.
Low	A slight, detectable, alteration of the baseline condition of the asset.
Negligible	A barely distinguishable change from baseline conditions.

2.2.1.3 Significance of Effect

21. The sensitivity of the asset and the magnitude of the predicted effects will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. **Table 2.3** summarises guideline criteria for assessing the significance of effects.

Table 2.3: Framework for Assessment of the Significance of Effects

Magnitude of Effect	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

22. Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light green in the above table.

2.2.1.4 Mitigation

23. Where the EIA identifies likely significant adverse environmental effects, mitigation measures will be proposed in order to avoid, reduce, offset or compensate those effects. These mitigation measures may be embedded in the design or compensatory. Such embedded mitigation measures will likely include the movement or loss of turbines, access tracks and other infrastructure via an iterative design process; and management and operational measures.

24. In the absence of specific Northern Irish planning guidance or advice notes on approach to EIA mitigation, reference is made to the Scottish best practice equivalent. In line with the mitigation hierarchy identified in Planning Advice Note (PAN) 1/2013[4], the strategy of avoidance, reduction, offsetting and compensation seeks:

- First to avoid significant adverse effects;
- Then to minimise those which remain; and
- Lastly, where no other remediation measures are possible, to propose appropriate compensation.

25. In addition, enhancement measures may be incorporated into design of the Development to maximise environmental benefits.

2.2.1.5 Residual Effects

26. Taking cognisance of the suggested mitigation (and enhancement) measures, the predicted effects will be re-assessed to determine whether any likely significant residual effects remain.

2.2.1.6 Cumulative Effects

27. At the time of writing it is known that there are other operational wind farms and a number of wind energy proposals such as single wind turbines located in the vicinity of the Site. Known wind energy developments are shown on **Figure 5.5** of Appendix B. Those which are operational, under construction, consented or at application stage will be considered within the cumulative assessment.

28. The methodology adopted for assessing the cumulative effects of wind energy developments will be in accordance with advice from Scottish Natural Heritage (SNH)[5,6] as advised within paragraph 1.3.17 of the Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy'[7]. Cumulative effects, which are the combined effects of two or more similar developments, will be considered for each technical area assessed within the EIA where relevant.

[4] Scottish Government, 2013, Environmental Impact Assessment [Online] Available at: http://www.gov.scot/Resource/0043/00432581.pdf (Accessed 25/04/2017)
[5] SNH, 2005, *Cumulative effect of Windfarms (Version 2)* Available online at: http://www.snh.org.uk/pdfs/strategy/cumulativeeffectsonwindfarms.pdf [Accessed 27/06/2017]
[6] SNH, 2012, *Assessing the Cumulative Impact of Onshore Renewable Energy Developments* Available online at: http://www.snh.gov.uk/docs/A675503.pdf [Accessed 27/06/2017]
[7] Department for the Environment (2009) Planning Policy Statement 18: Renewable Energy. Available online at: https://www.planningni.gov.uk/index/policy/planning_statements/planning_policy_statement_18__renewable_energy__best_practice_guidance.pdf [Accessed on 24/07/2017]

29. The extent of the cumulative assessment relative to each technical assessment will be agreed during the consultation process. For example, the potential landscape and visual effects, which relate to the visibility of the Development, will be much more wide ranging than noise effects, which will be limited to receptors in the more immediate vicinity of the Development. Specific guidance and policy exist for certain technical areas which advise how effects should be considered cumulatively and these will be used where relevant.

2.2.1.7 Alternatives

30. Schedule 4, Part 1 of the EIA Regulations requires an outline of reasonable alternatives (such as technology, location, size and scale) considered by the Applicant and the main reasons why the Development was chosen, taking into account the environmental effects. In addition the inclusion of the 'do nothing' scenario, which in this case is the continued operation of the Operational Rigged Hill Windfarm will be provided within the ES.

31. Consideration of alternative designs has already begun. The final layout of the Development will be based on a range of technical criteria, such as separation distances between turbines, wind speed, prevailing wind direction, existing infrastructure, topography, ground conditions, local environmental issues and landscape and visual considerations. The identification of these criteria is an iterative process: as they are identified the layout of the Development, including ancillary infrastructure, will undergo a series of modifications to avoid or reduce potential effects through careful design.

32. The ES, which details the findings of the EIA as set out in the EIA Regulations, is required to "*describe the likely significant effects*" of a development. Effects that are not considered significant, individually or cumulatively, do not need to be described to meet the requirements of the EIA Regulations.

2.3 Consultation

33. The process of identifying environmental effects is both iterative and cyclical, running in tandem with the design process. Consultation forms an integral role throughout the EIA process, and following scoping, and prior to submission of the planning application, two rounds of public consultation events will be held in locations near the Site providing members of the public the opportunity to learn more about the proposal and give feedback and comments to the project team. Consultation on specific technical issues has been, and will continue to be, undertaken with relevant consultees, where appropriate, as part of the EIA process.

2.4 Structure and Content of the ES

34. The content of the ES will broadly follow the specifications detailed within Schedule 4 of the EIA Regulations. The ES will consist of three volumes and a Non-Technical Summary (NTS).

- Volume 1 – Main ES text;
- Volume 2 – Figures; and
- Volume 3 – Technical Appendices.

35. The front end of the main ES text will include:

- An introduction, including a summary of the EIA process and methodology associated with repowering applications;
- Description of the site and its surroundings;
- Details of alternatives considered and the Development; and
- A summary of the relevant planning policy and environmental context.

36. The technical chapters of the ES will present details of the assessments undertaken, including any cumulative effects, required mitigation and residual effects.

2.5 Grid Connection

37. As required by PPS18 Renewable Energy, the Applicant will provide indicative details of the likely routes and the anticipated method of connection (over ground or underground) to the electricity network. This will form a separate document to accompany the ES. The responsibility for the final routing of electrical cabling onwards from the onsite sub-station to the nearest suitable point of the local electricity distribution network is the responsibility of the District Network Operator, presently NIE (Northern Ireland Electricity).

2.6 The EIA Project Team

38. On behalf of the Applicant, Arcus will be responsible for the overall coordination of the EIA and production of the ES with input from independent specialist consultants. **Table 2.4** provides details of the authors and contributors of each aspect of the ES.

Table 2.4: EIA Project Team

ES Chapter		Organisation
Chapters 1 - 4	Introductory ES Chapters	Arcus Consultancy Services Ltd
Chapter 5	Planning Policy Context	Juno Planning & Environmental Ltd
Chapter 6	Landscape and Visual Amenity	Optimised Environments Ltd (OPEN)
Chapter 7	Ecology	NM Ecology Ltd
	Fisheries	Paul Johnston Associates
Chapter 8	Ornithology	Bird Surveyors Ltd
Chapter 9	Noise	Arcus Consultancy Services Ltd and Cassidy Acoustics Ltd
Chapter 10	Archaeology and Cultural Heritage	Arcus Consultancy Services Ltd
Chapter 11	Access, Transport and Traffic	Arcus Consultancy Services Ltd
Chapter 12	Hydrology, Hydrogeology, Geology, Soils and Peat	Arcus Consultancy Services Ltd
Chapter 13	Tourism, Recreation and Socio-economics	Arcus Consultancy Services Ltd and BiGGAR Economics
Chapter 14	Other Issues	Arcus Consultancy Services Ltd

3 The Proposed Development

3.1 Site Description

1. The Operational Rigged Hill Windfarm is located approximately 6.2 kilometres (km) south-east of Limavady in Derry / Londonderry ('the Site'). The Site location is shown on **Figure 1.1** of Appendix B. The Operational Rigged Hill Windfarm, operated by the Applicant consists of ten 500 kilowatt (kW) Nordtank turbines with tip heights of 57 metres (m) and associated infrastructure including access tracks, control building and a meteorological mast.

2. The Operational Rigged Hill Windfarm occupies the summit of Rigged Hill (377 m above ordnance datum (AOD)), which takes the form of a north-south running ridge set between Temain Hill to the south of the Site (376 m AOD) and Boyd's Mountain (329 m AOD). The ten existing turbines associated with the Operational Rigged Hill Windfarm are located in two rows running roughly in parallel with the ridgeline. The predominant land use, in conjunction with the Operational Rigged Hill Windfarm is agricultural.

3. Elevations range on Site from approximately 110 m above ordnance datum (AOD) in the west of the Site, to approximately 377 m at the summit of Rigged Hill. There are a number of small unnamed watercourses and man-made open field drains within the Site, the majority of which drain in a westerly direction. The Aghadowey River is located at the southernmost boundary of the Site which flows westerly towards the River Roe.

4. A commercial coniferous plantation is located immediately to the north and west of the Site and two telecommunications masts are located on Temain Hill are approximately 900 m to the south of the Site.

5. There are no public roads within the Site although it is understood that the Ulster Way Walking Route currently utilises the Operational Rigged Hill Windfarm access tracks. The Operational Rigged Hill Windfarm is currently accessed through Cam Forest from the B66, located to the north of the Site.

6. To the west of the Site, the settlement pattern is highly dispersed with scattered farmsteads and residences as well as small clusters and ribbon development along the many roads. The nearest large settlement is Limavady which is located approximately 6.2 km north west from the closest operational turbine at Rigged Hill.

3.2 The Proposal

7. The Development will continue the current use of the Site, and it's generation of clean electricity from a renewable asset, with the potential to store some of that generated electricity. This can be achieved through decommissioning of the existing 10 wind turbines, replacing these with fewer, larger and more efficient machines, and the provision of a battery storage unit. It is also proposed to continue the 'in perpetuity' nature of the existing planning consent.

8. The Development will include:

- Decommissioning of 10 existing wind turbines and replacement with approximately seven wind turbines;
- Crane hardstandings;
- New road access junction;
- Upgrade of existing site access tracks and construction of new access tracks;
- Substation;
- Onsite power collection system (turbine transformers and underground cables);
- Permanent met mast;
- Battery storage unit;
- Grid connection; and
- Site restoration.

3.3 Indicative Developable Area

9. At this stage of development, a windfarm layout has not yet been identified; however initial assessments of the Site have identified areas which would be most suitable for development. This area is shown as the 'Indicative Developable Area' on **Figure 2.1** of Appendix B. The extent of the Indicative Developable Area has been determined based on the following constraints:

- Exclusion of areas likely to be active peat;
- Buffer of 50 m around natural watercourses;
- Buffer of 20 m around natural drains;
- Buffer of 750 m from houses;
- Buffer of 50 m from blade tip from the edge of forested areas;
- Buffer of 500 m from Joint Radio Company (JRC) telecommunications masts at Temain Hill;
- Buffer of 500 m of JRC operated telecommunications links; and
- Buffer of 100 m of Arqiva operated telecommunication links.

10. The Indicative Developable Area shows the location within the Site where turbines are likely to be sited. It should be noted that ancillary infrastructure, such as access tracks, the battery storage unit and the substation, may be located in other locations outside the Indicative Developable Area, as it may be more appropriate to site these off the top of the hill within a more agricultural setting.

11. As part of this Scoping Request, the technical methodologies detailed in **Sections 5** to **13** outline the baseline work undertaken to date, any remaining baseline and survey work to be undertaken, and sets out the scope and approach to the assessment.

12. Following the completion of baseline surveys, a site layout will be finalised. The design will be developed throughout the EIA process and the final design assessed within the ES. We will continue to seek agreement, based on further evidence and consultation, on any additional topics/areas that can be scoped out of the assessment throughout the course of the EIA.

13. Whilst no fixed design has been identified at this stage, **Sections 3.4** to **3.7** detail the likely parameters of components which will make up the Development.

3.4 Wind Turbines

14. A summary of the proposed development details are set out in **Table 3.1**.

Table 3.1: Summary of Proposed Turbines

Number of turbines	Approximately seven
Micrositing allowance	50 m
Height of turbines to blade tip	Up to 135 m
Type of turbine	Three bladed, horizontal axis
Generating capacity (per turbine)	Up to 3.6 MW
Total windfarm generation capacity	In the region of 25 MW

15. For the purposes of the EIA, a precautionary approach will be taken and a worst case scenario will be identified and assessed for each receptor as appropriate. It is important to note that the most suitable turbine model for a particular location can change with time, and therefore, a final choice of machine for the Development has not yet been made. The most suitable machine for the Development would be chosen shortly before construction, subject to the procurement process and would be within the overall turbine parameters consented.

3.5 Access and Access Tracks

16. The turbines will be delivered to a nearby port facility capable of handing them (at the time of writing, Londonderry Port is considered the most appropriate facility, routes from Larne and Belfast will also be considered). The turbine components would then be delivered to the Site using the existing road network, utilising trunk and major roads as far as possible. An access and traffic assessment will be conducted as outlined in **Section 10** of this Scoping Request.

17. Onsite access tracks will be required to provide access from the public highway, access between turbines, the construction compound and substation. These will be constructed of a graded stone and will have a running width of approximately 5 m, which will increase at bends/corners, or as appropriate for the ground conditions. Where possible, and in order to minimise environmental effects, existing access tracks within the Site will be re-used and upgraded as appropriate. Where the existing tracks are not suitable, new access tracks will be constructed to the same specification.

18. Should the existing track from the public highway to the Site (from Ringsend Road through Cam Forest to the north of the Site) not be available for environmental, commercial or technical reasons, an alternate access would be taken from the western side of the Site via the construction of a new site access and access track built to a specification capable of transporting the larger wind turbine components. In order to minimise construction effects, stone for construction would be imported from local quarries, or be re-used from areas of the Site where decommissioning / construction activities have generated suitable materials.

3.6 Substation and Grid Connection

19. Underground cabling, laid where possible alongside the access tracks, will link the turbine transformers to a single storey control building. Each turbine transformer will be located either within the turbine nacelle, within the base of the tower or in a small enclosure at the base of the turbine.

20. A new substation will be required as part of the Development and will be sited appropriately and designed to the standard required by Northern Ireland Electricity (NIE) Networks for the accommodation of substation equipment.

21. It is anticipated that a new connection to the electrical grid will be required to accommodate this Development. Based on initial discussions with NIE to date, the Applicant is currently investigating connecting to the Garvagh 'cluster' substation. Although the application for connection of the Development to the electrical grid will fall under a separate consenting regime, a high level assessment of possible route options will be carried out, in order to identify and evaluate the potential environmental effects of the proposed grid connection. This will be presented alongside the ES. This assessment will be based on a 33 kV overhead wooden pole line, although it is noted that the final routing and form of connection will be determined by NIE.

3.7 Battery Storage

22. The Applicant is investigating the feasibility of installing battery storage unit as part of the Development. This would involve the installation of batteries and inverters housed in racks similar to server units in a self-contained building which will be located on a concrete hard standing area adjacent to the substation. The building would house a number of batteries with the battery storage components contained in sealed units, associated air conditioning systems, an electrical room and a maintenance room. The building, housing the storage equipment itself, would be designed to reflect the vernacular architecture of agricultural farm buildings in the area and would be of similar appearance to the substation. An underground cable will connect the battery storage facility to the onsite substation.

3.8 Decommissioning of the Operational Rigged Hill Windfarm

23. The first phase of the Development will comprise the decommissioning and removal of the existing turbines, external transformers, and wind monitoring masts from the site. It is anticipated that the turbines and external transformers will be carefully dismantled and transported offsite, possibly for resale in the second hand market.

24. The dismantling of the Operational Rigged Hill Windfarm is expected to take approximately two months following an initial period of four weeks during which a temporary decommissioning / construction compound will be constructed and existing tracks and crane hardstandings will be cleared of vegetation and upgraded for use by decommissioning vehicles as required.

25. Following initial track construction and upgrades, cranes will be used to split the turbines into suitable sections, which will then be transported from the Site by heavy goods vehicles (HGVs) or possibly abnormal loads if required for resale. The removal of the turbine components from the Site could therefore result in additional abnormal loads as are required for construction, a final position will be agreed via further consultation. Following removal of the blades, power cables will be disconnected and lowered with control cables left in place, before the tower sections are lowered.

26. Turbine and transformer bases will then be cut to 1 m below the surface and backfilled with suitable topsoil, generated from the construction activities elsewhere in the Site. Those areas of hardstanding and access track which are being reused will be retained, whilst unaffected areas of hardstanding and access track that have already naturally regenerated will be left in situ, reducing any adverse environmental impact caused by their removal.

27. All waste material arising from the decommissioning phase will be disposed of responsibly and in accordance with relevant waste management regulations prevailing at the time.

3.9 Construction of Repowered Rigged Hill Windfarm

28. It is expected that the construction phase of the Development will run in parallel with the decommissioning of the existing windfarm and take approximately 8 months in total, depending on the final layout. This period is somewhat weather dependent and could be affected by onsite conditions. It is envisaged that the construction programme would follow the broad outline as detailed in **Table 3.2** below.

Table 3.2: Indicative Construction Programme

Activity	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8
Site Establishment								
Decommissioning of existing turbines								
Access road construction								
Excavation and construction of turbine foundations and hardstandings								
Cable installation and electrical works								
Turbine delivery and erection								
Turbine commissioning								
Site restoration								

3.10 Decommissioning of the Repowered Windfarm

29. In the event that the repowered windfarm requires to be decommissioned, the process would be similar to the decommissioning of the existing Operational Rigged Hill Windfarm. Given the fewer number of turbines, the potential effects arising from such decommissioning will be less than the effects arising as a result of the combined decommissioning and construction phase described above, these phases combined are therefore considered to represent the worst case parameters for assessment purposes.

4 Policy and Legislative Context

4.1 Introduction

1. This section of the Scoping Request outlines the planning legislative context for the Development as well as identifying the key policy documents of relevance to the Development which will be considered throughout the Environmental Impact Assessment (EIA).

2. It is envisaged that the documents identified within this section will be considered in further detail during the preparation of the planning application for the Development.

4.2 Renewables and Northern Ireland

3. In 2010, the Department for Enterprise, Trade and Investment (DETI) published the Strategic Energy Framework (SEF)[8] which detailed NI's energy future over the next ten years and set the renewable electricity targets for 2020- identifying that 40% of electrical energy needs to be sourced from renewables by 2020. The Department for Economy's statistics on 'Electricity Consumption and Renewable Generation in Northern Ireland (June 2017) latest results show that:

- For the twelve months period of April 2016 to March 2017, 27.1% of total electricity consumption in Northern Ireland was generated from renewable sources located in Northern Ireland. This represents an increase of 1.6 percentage points on the previous twelve months period (April 2015 to March 2016) and is the highest rolling twelve months ; and
- Of all renewable electricity generated within Northern Ireland over the twelve months period April 2016 to March 2017, 82.8% was generated from wind. This compares to 87.6% for the previous twelve months period (April 2015 to March 2016).

4. It is noted that in the Planning Appeals Commission (PAC) Decision (Appeal Ref 2009/A0363), the Commissioner T. A. Rue acknowledged that "*it is noteworthy that the 40% is a minimum target and not a cap*".

5. The 2010 SEF[8] notes that electricity generated by onshore wind farms is the most established, large-scale source of renewable energy in Northern Ireland. It also states that onshore wind farms will play a vital role in meeting the new renewable electricity target.

6. The Northern Ireland Investment Strategy 2011-2021[9] highlights the importance of renewable sources in electricity generation. The long-term targets are emphasised, underlining that the UK Climate Change Act 2008 legislated for an 80% mandatory cut in the UK's carbon emissions by 2050 (compared to 1990 levels), with a target of 35% by 2025.

7. The Onshore Renewable Energy Action Plan 2013-2020[10] considers the contribution of onshore renewable technologies to the 40% renewable energy target by 2020 and recognises the impact that onshore wind has on the electricity network in Northern Ireland.

8. The Development will contribute towards meeting the Northern Irish key renewable targets through the repowering of Operational Rigged Hill Windfarm which will result in an increased overall generating capacity as well as securing continuity of renewable energy provision.

4.3 Planning Legislative Context

9. **Table 4.1** outlines the Northern Ireland planning legislative (primary legislation and subordinate legislation) context for the Development.

[8] Department of Enterprise, Trade and Investment (2010). Strategic Energy Framework. Available online at: https://www.economy-ni.gov.uk/publications/energy-strategic-framework-northern-ireland [Accessed on 07/07/2017]
[9] Northern Ireland Executive (2015). Investment Strategy for Northern Ireland 2011 – 2021. Available online at: https://www.infrastructure-ni.gov.uk/publications/investment-strategy-northern-ireland-2011-2021 [Accessed on 07/07/2017]
[10] Department of Enterprise, Trade and Investment (2013). Onshore Renewable Electricity Action Plan. Available online at: https://www.economy-ni.gov.uk/articles/onshore-renewable-electricity-action-plan [Accessed on 07/07/2017]

Table 4.1: Northern Ireland Planning Legislation Context

Northern Ireland Planning Legislation	
Primary Legislation	
The Planning Act (Northern Ireland) 2011	The Planning Act (NI) 2011 Act provides the legislative basis for the Northern Ireland planning system including the development management systems, development plan preparation, planning appeals and enforcement and the way in which these functions are delivered.
Subordinate Legislation	
The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017	The legislative framework for EIA is set out by the EIA Directive (European Directive 2014/52/EU amending Codified EIA Directive 2011/92/EU). The requirements of the EIA Directive in NI are transposed by the Planning (Environmental Impact Assessment) Regulations (NI) 2017 (the EIA Regulations). The EIA Directive aims to ensure that a planning authority granting planning permission for a development proposal makes its decision with the full knowledge of any likely significant effects on the environment by setting out a procedure known as environmental impact assessment to assess such effects. Reasons for determination and decisions must be provided and shared with the public.
The Planning (General Development Procedure) Order 2015 (as amended 2016)	The main purpose of the Planning (General Development Procedure) Order 2015 (as amended 2016) is to transfer the necessary powers required to operate the planning system currently contained within the Planning (General Development) Order 1993 (the 1993 GDO) to the councils. It also introduces some new provisions, namely: • Design and access statements for major applications; • Non-material changes to a previous grant of planning permission: • Publicity of applications for planning permission; and • Changes to the statutory consultation process.
The Planning (Development Management) Regulations (Northern Ireland) 2015	The Planning (Development Management) Regulations (NI) 2015 sets out the details of key elements of the development management process in relation to the new hierarchy of development, pre-application community consultation, pre-determination hearings and schemes of delegation while also making a transitional provision.
The Planning (Fees) Regulations (Northern Ireland) 2015 (as amended)	The effect of the Planning (Fees) Regulations (NI) (as amended) is to provide for the charging of a fee for the processing of a planning application.

4.3.1 The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017

10. The Development is classified as 'Schedule 2' development as detailed in the EIA Regulations 2017. See **Section 2**: **Environmental Impact Assessment** of this Scoping Request for further details on The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017.

4.4 Planning Policy Context

11. **Table 4.2** outlines the Northern Ireland planning policy context. The planning policy context identifies relevant planning policy at a regional and local planning policy level. The Planning Statement, which will be submitted alongside the ES, and the technical ES Chapters will assess the Development against the national and local policies outlined below.

Table 4.2: Northern Ireland Planning Policy Context

Planning Policy Document	Key Policies
Regional Development Strategy (RDS) for Northern Ireland 2035	The RDS outlines 'Regional Guidance' (RG) which applies to everywhere in the region and is presented under 3 sustainable themes of Economy, Society and Environment. • RG5 - Deliver a sustainable and secure energy supply; • RG9 - Reduce our carbon footprint and facilitate mitigation and adaptation to climate change whilst improving air quality; and • RG11 - Conserve, protect and, where possible, enhance our built heritage and our natural environment.
Strategic Planning Policy Statement for Northern Ireland (SPPS) September 2015	SPPS Subject Policies: • Archaeology and Built Heritage (Para 6.1- 6.30); • Development in the Countryside (Para 6.61- 6.78); • Flood Risk (Para 6.99- 1.132); • Natural Heritage (Para 6.168- 6.198); • Renewable Energy (Para 6.214- 6.234); • Telecommunications and other Utilities (Para 6.235- 6.250); • Tourism (Para 6.251- 6.266); • Transportation (Para 6.293- 6.305); and • Waste Management (Para 6.306- 6.323).
Strategic Planning Policy Statement- Strategic Planning Policy Review for Inshore Renewable Energy Development	A review of planning policies on renewable energy was announced in September 2016. The strategic review is being undertaken by Element Consultants on behalf of the Department for Infrastructure (DfI). DfI Policy section outlined that it is expected that the consultants will complete their review by the end of 2017 with proposed revised draft policy published in June/ July 2018 (tentative dates).
Planning Policy Statement 2 - Natural Heritage	Policy NH1 – European and Ramsar Sites – International Policy NH2 – Species Protected by Law Policy NH3 – Sites of Nature Conservation Importance - National Policy NH4 – Sites of Nature Conservation Importance - Local Policy NH5 – Habitats, Species or Features of Natural Heritage Importance Policy NH6 – Areas of Outstanding Natural Beauty
Planning Policy Statement 3 - Access, Movement and Parking (PPS3,revised 2015)	Policy AMP 1 - Creating an Accessible Environment Policy AMP 2 - Access to Public Roads Policy AMP 3 - Access to Protected Routes (as updated in PPS 3 Clarification) Policy AMP 6 - Transport Assessment Policy AMP 7 - Car Parking and Servicing Arrangements Policy AMP 8 - Cycle Provision Policy AMP 9 - Design of Car Parking Policy AMP 10 - Provision of Public and Private Car Parks Policy AMP 11 - Temporary Car Parks
Planning Policy Statement 6 - Planning, Archaeology & the Built Heritage	Policy BH2 - The Protection of Archaeological Remains of Local Importance and their Settings Policy BH3 - Archaeological Assessment & Evaluation Policy BH 4 - Archaeological Mitigation Policy BH 11 - Development affecting the Setting of a Listed Building
Planning Policy Statement No.10 - Telecommunications	Policy Tel 2 - Development and Interference with Television Broadcasting Services

Planning Policy Document	Key Policies
Planning Policy Statement 13 - Transportation and Land Use	General Principle 5 - Developers should bear the cost of transport infrastructure necessitated by their development.
Planning Policy Statement No.16 - Tourism	Policy TSM 8 - Safeguarding of Tourism Assets
Planning Policy Statement No.18- Renewable Energy including PPS 18 Best practice Guidance (BPG) and Supplementary Planning Guidance (SPG)	Policy RE1 - Renewable Energy PPS 18 BPGs outline the use of ETSU-R-97 for noise assessments for windfarm development and guidelines for shadow flicker assessment. The SPGs identify the development as being within 'Landscape Character Area No.36 - Binevenagh- this LCA is classified as having a 'high- medium sensitivity' for windfarm development.
Planning Policy Statement No.21 - Sustainable Development in the Countryside	Policy CTY 1 - Development in the Countryside Policy CTY 13 - Integration & Design of Buildings in the Countryside.
Local Planning Policy	
The Northern Area Plan 2016 (NAP 2016)	The NAP is the current Local Development Plan for the Causeway Coast and Glens Borough Council (The Council). NAP provides the local planning policy framework. However, it does not contain any specific policies on wind energy or renewable energy projects - therefore PPS18 and the SPPS are the relevant planning policy documents.
Causeway Coast and Glens Borough Council Local Development Plan 2030	The Council are in the preparatory stages of producing a new LDP for the Council area. The published LDP Timetable outlined that the 'Preferred Options Paper' (POP) should be published for consultation in autumn/ winter 2017- the Council has confirmed that they are currently in line with their published LDP Timetable. It is anticipated that Councils preferred options for wind energy development will form part of the 'POP.' The LDP Timetable notes that the Draft Plan Strategy will be issued in autumn 2018 for consultation and aims that the Plan Strategy will be adopted in autumn 2018 following independent examination. The Timetable outlines that the Draft Local Policies Plan will be published for consultation 2020/21 with anticipated adoption in winter 2022. As part of the preparatory studies the following relevant Topic Papers have been presented to the Planning Committee. • Environment; • Landscape Character; • Countryside Pressure Analysis; and • Tourism.

4.4.1 Regional Planning Policy- Strategic Planning Policy Statement (SPPS Transitional Arrangements)

13. A transitional period will operate until such times as the Local Development Plan Strategy for the whole Council area has been adopted. During the transitional period planning authorities will apply existing retained policy together with the SPPS. Relevant supplementary and best practice guidance will also continue to apply. Where a Council adopts its Plan Strategy, existing policy retained under the transitional arrangements shall cease to have effect in the district of that Council and shall not be material from that date, whether the planning application has been received before or after that date.

14. Any conflict between the SPPS and any retained policy (Planning Policy Statements) must be resolved in favour of the provisions of the SPPS. For example, where the SPPS introduces a change of policy direction and/or provides a policy clarification that would conflict with the retained policy the SPPS should be accorded greater weight in the assessment of individual planning applications. However, where the SPPS is silent or less prescriptive on a particular planning policy matter than retained policies this should not be judged to lessen the weight afforded to the retained policy. PPS 18 and its associated best practice guidance (BPG) and supplementary planning guidance (SPG) are retained as planning policy.

15. Policy RE1 of PPS 18 and the SPPS differ in how they describe the weight that should be attached to the Project's wider environmental, economic and social benefits. The SPPS states that these are material considerations that will be given appropriate weight in determining whether planning permission should be granted whereas Policy RE1 states that they should be accorded significant weight. The policy provision of the SPPS should be accorded greater weight in the assessment of individual wind energy planning applications.

4.5 Key Questions for Consultees

16. Key questions for Consultees are:

- Do Consultees agree with the key policies listed in Table 4.2 against which the effects of the Development will be assessed?
- Are there any other areas of policy and/or guidance Consultees would recommend be included within the ES?
- Do Consultees agree with the description of the transitional arrangements outlined in **Section 4.4.1** above?
- Are Consultees satisfied with the proposal that further areas may be scoped out, with evidence and following consultation, once the detailed design and layout are developed further?
- Are Consultees satisfied that in some areas relating to wind energy development, where there is a clear absence of Northern Ireland planning policy guidance, that reference is made to other jurisdictions for applicable and relevant policy and guidance, for example guidance from the Scottish Government?

5 Landscape and Visual Amenity

5.1 Introduction

17. This section of the Scoping Request sets out the proposed methodology and approach to be applied in the production of the Landscape and Visual Impact Assessment (LVIA) and presents the suggested scope of the LVIA in terms of those landscape and visual receptors to be scoped in and scoped out of the assessment process based on the baseline information and fieldwork undertaken to date to inform the scope of the assessment. Justification of the scope is presented through an initial baseline assessment of the relevant receptors, and an initial assessment of their sensitivity to the Development.

18. The purpose of the LVIA is to identify and record the likely significant effects that the Development may have on physical elements of the landscape; landscape character; areas that have been designated for their scenic or landscape-related qualities; and views from various locations such as settlements, routes, hilltops and other sensitive locations. The potential cumulative effects that may arise from the addition of the Development to other existing, under construction, consented and application stage windfarms are also considered.

19. The LVIA will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

20. The decommissioning of the Operational Rigged Hill windfarm and the construction of the Development is likely to occur partly in tandem and would be worse than if the two processes were to arise at different times. This level of landscape and visual change also represents a worst case scenario than the decommissioning of the repowered wind turbines, should this be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

21. Receptors may not be affected at all development stages. This Scoping Request suggests which stages will need to be considered in respect of those receptors requiring detailed assessment.

22. A high level assessment of the options for grid routeing between the Development and the sub-station at Garvagh will also be undertaken in accordance with the requirements of the SPG.

5.1.1 The Development

23. The Development is set to the north of the Sperrin Hills in Derry / Londonderry, Causeway Coasts and Glens District (formerly in Limavady Borough), Northern Ireland and comprises a repowering of the Operational Rigged Hill Windfarm. This includes 10 Nordtank turbines of a 39 m hub height, 37 m rotor diameter and 57 m blade tip height, which have been operational since 1994.

24. The Development would see the Operational Rigged Hill Windfarm replaced with in the region of seven turbines of a maximum 135 m to tip and associated infrastructure, including a battery storage unit. The larger scale of the turbines will require them to be more widely spaced than the current turbines and therefore, as well as being taller, they will extend across a wider site area than is currently the case. The decommissioning / construction stage elements of the Development are described in **Section 3: The Proposed Development** of this Scoping Request.

25. The Site lies between the Sperrin Area of Outstanding Natural Beauty (AONB) to the south and Binevenagh AONB in the north.

5.1.2 Aims

26. The main aim of this section of the Scoping Request is to identify those receptors to be scoped in and out of the LVIA. The process of identification is based on an initial assessment of potential effects. Zone of Theoretical Visibility (ZTV) diagrams have been produced based on a layout comprising in the region of seven turbines, in correlation with potential landscape and visual receptors to ascertain where theoretical visibility may occur. This information has been supplemented by field work to develop an understanding of where actual visibility may occur and to ascertain the sensitivity of the receptors and the potential magnitude of change.

27. In terms of the sensitivity of landscape and visual receptors, the main considerations in the initial assessment include defining the value of the receptor and its susceptibility to the specific impacts of the Development. In terms of magnitude of change, the main considerations include the distance of the receptor from the Development and the level and extent of actual visibility. A summary of the methodology for the LVIA is presented in **Section 5.2**. The initial stages of this methodology have been applied in the preliminary assessment to ascertain which receptors to scope in or out.

5.2 Suggested Methodology

28. This section summarises the methodology and guidance which it is proposed will be used to carry out the LVIA.

5.2.1 Guidance

29. The LVIA will follow Optimised Environment Ltd's (OPEN) methodology devised specifically for the assessment of windfarm developments and generally accords with 'Guidelines for Landscape and Visual Impact Assessment: Third Edition' (GLVIA3)[11], the key source of guidance for LVIA in the United Kingdom (UK).

30. GLVIA 3 sets out an approach to the assessment of magnitude of change in which three separate considerations are combined within the magnitude of change rating. These are the size or scale of the effect, its geographical extent and its duration and reversibility.

31. OPEN considers that the process of combining all three considerations in one rating can distort the aim of identifying significant effects of windfarm development. For example, an increased magnitude of change, based on size or scale, may be reduced to a lower rating if it occurred in a localised area and for a short duration. This might mean that a potentially significant effect will be overlooked if effects are diluted down due to their geographical extents and/or duration or reversibility.

32. OPEN has chosen to keep these three considerations separate, by basing the magnitude of change on size or scale to determine where significant and not significant effects occur, and then describing the geographical extents of these effects and their duration and reversibility separately.

33. Other sources of guidance that will be used and referenced in the LVIA include the following:

- Northern Ireland Environment Agency's (NIEA) *Wind Energy Development in Northern Ireland's Landscapes - Supplementary Planning Guidance to accompany Planning Policy Statement 18 Renewable Energy*[12];
- Scottish Natural Heritage's (SNH) *Siting and Designing Windfarms in the Landscape*[13];
- SNH's *Assessing the Cumulative Impact of Onshore Wind Energy Developments*[14];
- SNH's *Visual Representation of Windfarms: Version 2.2*[15];
- The Landscape Institute's *Landscape Institute Advice Note 01/11, Photography and photomontage in landscape and visual impact assessment*[16];
- Countryside Agency and SNH's *Landscape Character Assessment Guidance for England and Scotland, Countryside Agency and Scottish Natural Heritage*[17]; and
- Countryside Agency and SNH's *Landscape Character Assessment Guidance Topic Paper 6: Techniques and Criteria for Judging Sensitivity and Capacity, Countryside Agency and Scottish Natural Heritage*[18].

[11] Landscape Institute (2013) Guidelines for Landscape and Visual Impact Assessment: Third Edition' (GVLIA3)
[12] Northern Ireland Environment Agency (2010). Wind Energy Development in Northern Ireland's Landscapes - Supplementary Planning Guidance to accompany Planning Policy Statement 18 Renewable Energy
[13] Scottish Natural Heritage (2017) Siting and Designing Windfarms in the Landscape
[14] Scottish Natural Heritage (2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments;
[15] Scottish Natural Heritage (February 2017) Visual Representation of Windfarms: Version 2.2
[16] The Landscape Institute (2011) Landscape Institute Advice Note 01/11, Photography and photomontage in landscape and visual impact assessment
[17] Countryside Agency and Scottish Natural Heritage (2002) Landscape Character Assessment Guidance for England and Scotland, Countryside Agency and Scottish Natural Heritage
[18] Countryside Agency and Scottish Natural Heritage (2004) Landscape Character Assessment Guidance Topic Paper 6: Techniques and Criteria for Judging Sensitivity and Capacity, Countryside Agency and Scottish Natural Heritage

34. Whilst some of this guidance has been authored in other parts of the UK, aspects of it have been used within recent planning applications for windfarms in Northern Ireland and are becoming standard practice across the UK.

5.2.2 Study Area

35. The initial step in the LVIA is the establishment of the study area for the assessment. An area with a radius of 30 kilometres (km) from the nearest turbine in the Development is proposed as the study area. This aligns with guidance presented in the SPG which accompanies Planning Policy Statement 18 which states "*For turbines of medium or large commercial height we would generally recommend a radius of 20-30 km*." A ZTV analysis has been carried out for this area, based on a preliminary turbine layout, as has mapping of landscape character, designations and principal visual receptors. This study area is shown on **Figure 5.1** of Appendix B.

36. The study area is not intended to provide a boundary beyond which the Development will not be seen, but rather to define the area beyond which it is unlikely to have a significant landscape or visual effect. A significant effect is, in reality, very unlikely to occur towards the edges of the study area due to a combination of factors such as distance from the Development, which ensures that the turbines will appear as minor features in views and will affect a very limited proportion of the wider views available; and screening by intervening buildings and vegetation.

37. The cumulative landscape and visual assessment also covers a study area of 30 km from the nearest turbine. Due to the nature of the Development as a repowering of an operational windfarm and the cumulative windfarm context within the local area significant cumulative effects will not arise beyond this and are likely to be substantially more localised. Single turbines are shown within a 5 km radius of the Development. Cumulative Windfarms are shown in **Figure 5.6** of Appendix B.

5.2.3 Desk Study

38. The assessment has been initiated through a desk study of the site and 30 km radius study area ('the Study Area'). This study has identified aspects of the landscape and visual resource that will need to be considered in the landscape and visual assessment, including landscape-related planning designations, landscape character typology, and potential cumulative windfarms, routes (including roads, railway lines, National Cycle Routes and long distance walking routes), and settlements.

39. The desk study has also utilised Geographic Information System (GIS) and Resoft Windfarm software to explore the potential visibility of the Development. The resultant ZTV diagrams (**Figures 5.2 - 5.5** of Appendix B**)** and wirelines used in the field have provided an indication of which landscape and visual receptors are likely to be key sensitivities in the assessment. **Figure 5.5** of Appendix B illustrates the difference in the theoretical visibility of the Operational Rigged Hill Windfarm and the Development.

5.2.4 Field Survey

40. Field surveys have been carried out throughout the 30 km radius study area, although the focus is on the area that covers the site and those areas that are shown on ZTVs to gain theoretical visibility of the Development. The baseline field survey has four broad stages:

- A preliminary familiarisation around the study area in order to visit landscape and visual receptors that have been identified through the desk study and verify their existence and importance. Important features and characteristics that have not become apparent through the desk study are also identified, and particularly sensitive receptors have been noted in order to inform the design process;
- A visit in the vicinity of the site, in order to establish the potential of the site for windfarm development and identify the most suitable areas for Development in landscape and visual terms, along with any constraints that may restrict the developable area;
- Further field survey around the study area, concurrent with the design process for the development, to identify those receptors that are likely to be important in the assessment and inform the layout design, possible turbine height, and the extent of the Development; and
- The identification of representative viewpoints to include in the landscape and visual assessment, including a wide range of receptors, landscape character, and directions and distances from the Development.

5.2.5 Categories of Landscape and Visual Effects

41. The LVIA is intended to determine the effects that the Development will have on the landscape and visual resource. For the purpose of assessment, the potential effects on the landscape and visual resource are grouped into four categories:

42. **Physical effects**: physical effects are restricted to the area within the Site Boundary and are the direct effects on the existing fabric of the site. This category of effects is made up of landscape elements, which are the components of the landscape such as rough grassland and moorland that may be directly and physically affected by the Development.

43. **Effects on landscape character**: landscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and the way that this pattern is perceived. Effects on landscape character arise either through the introduction of new elements that physically alter this pattern of elements or through visibility of the Development that may alter the way in which the pattern of elements is perceived. This category of effects is made up of landscape character receptors, which fall into two groups; landscape character areas and landscape-related designated areas.

44. **Effects on views**: the assessment of the effects on views is an assessment of how the introduction of the Development will affect views throughout the study area. The assessment of effects on views is carried out in two parts:

- An assessment of the effects that the Development will have on a series of viewpoints around the study area; and
- An assessment of the effects that the Development will have on views from principal visual receptors, which are relevant key settlements and routes found throughout the study area.

45. **Cumulative effects**: cumulative effects arise where the study areas for two or more operational, under construction, consented or application stage windfarms overlap so that both of the windfarms are experienced at a proximity where they may have a greater incremental effect, or where windfarms may combine to have a sequential effect. In accordance with guidance[19], the LVIA assesses the effect arising from the addition of the Development to the cumulative situation. The cumulative situation comprises commercial scale windfarms across the 30 km study area and single turbines within a 5 km radius.

5.2.6 Assessment of Effects

46. The objective of the assessment of the Development is to predict the likely significant effects on the landscape and visual resource. In accordance with planning regulations[20], the LVIA effects are assessed to be either significant or not significant. The LVIA does not define intermediate levels of significance as the regulations do not provide for these.

47. Section 5.2.5 describes how the landscape and visual assessment is carried out in four categories: the assessment of physical effects; the assessment of effects on landscape character; the assessment of effects on views; and the assessment of cumulative effects. The broad principles used in the assessment of significance of these categories are the same and are described below.

48. The significance of effects is assessed through a combination of two considerations: the sensitivity of the landscape receptor or view and the magnitude of change that will result from the addition of the Development.

5.2.6.1 Sensitivity

49. The sensitivity of a landscape or visual receptor is determined by a combination of the value of the receptor and the susceptibility of the receptor to the change that the Development would have on the landscape character or the view.

50. The sensitivity of the landscape or visual receptor is evaluated as high, medium-high, medium, medium-low or low by combining the value of the receptor and its susceptibility to change. The basis for the assessments is made clear using evidence and professional judgement in the evaluation of each receptor.

51. The criteria used to assess value and susceptibility in respect of landscape and visual receptors differs slightly as described below.

5.2.6.1.1 Value

52. The value of a landscape character receptor is determined through its importance in terms of any designations that may apply as well as its scenic quality, sense of place, rarity and representativeness. The value is also determined by the

[19] Scottish Natural Heritage (2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments
[20] The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017

experience of the landscape in relation to perceptual responses, cultural associations, its iconic status, its recreational value, and the contribution of other values such as nature conservation or archaeology.

53. The value of a view is a reflection of the recognition and importance attached either formally through identification on mapping or being subject to planning designations, or informally through the value which society attaches to the view(s).

54. The value of the landscape or visual receptor is evaluated as high, medium-high, medium, medium-low or low. The basis for the assessments is made clear using evidence and professional judgement in the evaluation of each receptor.

5.2.6.1.2 Susceptibility

55. Susceptibility, in respect of the LVIA, relates to the ability of the landscape or visual receptor to accommodate the changes that would occur as a result of the addition of the Development to the baseline situation.

56. In respect of landscape receptors, considerations include the specific nature of the Development, e.g. its size, scale, location, context and characteristics; the degree to which the receptor may accommodate the influence of the Development; and the extent to which it would influence the character of the landscape receptors across the study area.

57. In respect of visual receptors, considerations include the nature of the viewer experiencing the view and how susceptible they are to the potential effects of the Development. Professional judgement is used based on the occupation or activity which viewers are engaged in at the viewpoint or series of viewpoints. The principal visual characteristics, e.g. those features which define the view, and the viewer's experience of the visual receptor in relation to the extent to which their focus is directed towards the view, the duration and clarity of the view and whether it is a static or transitory view, is also considered

58. The susceptibility of the landscape or visual receptor is evaluated as high, medium-high, medium, medium-low or low. The basis for the assessments is made clear using evidence and professional judgement in the evaluation of each receptor.

5.2.6.2 Magnitude of Change

59. The magnitude of effect, in respect of the LVIA, differs in respect of landscape and visual receptors. The differences are set out below.

5.2.6.2.1 Landscape Receptors Magnitude of Effect

60. The magnitude of effect on landscape character receptors is an expression of the scale of the change that would result from the Development, and is dependent on variables relating to the size or scale of the change, its duration and its geographical extent. The basis for the appraised level is made clear using evidence and professional judgement, based on the following criteria:

- The extent of existing landscape elements that would be lost and the proportion of the total this represents as well as the contribution of that element to the character of the landscape;
- The degree to which the pattern of elements that makes up the landscape character would be altered by the Development, i.e. by removal or addition of elements in the landscape;
- The extent to which the effects change the key characteristics of the landscape as identified in the baseline study, which may be critical to the distinctive character of the landscape;
- The distance between the landscape character receptor and the Development. Generally, the greater the distance, the lower the scale of change; and
- The proportion of the Development that would be seen.

61. Intermediate levels may also be included such as medium-high or medium-low, where the change falls between the definitions.

5.2.6.2.2 Views Magnitude of Effect

62. The magnitude of effect on views is made clear using evidence and professional judgement, based on the following criteria:

- The distance between the visual receptor and the Development. Generally, the greater the distance, the lower the magnitude of effect;
- The scale and character of the context within which the Development would be seen. This would determine the degree to which the Development can be accommodated in the existing outlook. The scale of the landform/buildings, the

patterns of the landscape, the existing land use and vegetation cover, and the type and form of development seen in the baseline view would all be relevant;

- The extent of the Development that would be seen. Visibility of the Development may range from the full height of the turbines to just the upper parts;
- The position of the Development in relation to the principal orientation of the receptor. If the Development is seen in a specific, directional vista from a receptor the magnitude of effect would generally be greater; and
- The width of the view available and the proportion of the view that is affected by the Development. Generally, the more of a view that is affected, the higher the magnitude of effect.

63. Intermediate levels may also be included such as medium-high or medium-low, where the change falls between the definitions.

5.2.6.3 Assessment of Significance

64. The significance of effects is assessed through a combination of the sensitivity of the landscape receptor/ view, and the magnitude of change that will result from the addition of the Development. While OPEN's methodology is not reliant on the use of a matrix to arrive at the conclusion of a significant or not significant effect, a matrix is included below in **Table 5.1** to illustrate how combinations of sensitivity and magnitude of change ratings can give rise to significant effects. The matrix also gives an understanding of the threshold at which significant effects may arise.

Table 5.1: Significance Matrix

Magnitude Sensitivity	High	Medium-High	Medium	Medium-Low	Low	Negligible
High	Significant	Significant	Significant	Significant / Not Significant	Not Significant	Not Significant
Medium-High	Significant	Significant	Significant / Not Significant	Significant / Not Significant	Not Significant	Not Significant
Medium	Significant	Significant / Not Significant	Significant / Not Significant	Not Significant	Not Significant	Not Significant
Medium-Low	Significant / Not Significant	Significant / Not Significant	Not Significant	Not significant	Not Significant	Not Significant
Low	Significant / Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

65. Effects within the dark green boxes in the matrix are considered to be significant in terms of the EIA Regulations. Effects within the light grey boxes may be significant or not significant, depending on the specific relevant factors that arise at a particular landscape or visual receptor. In accordance with GLVIA3[11], experienced professional judgement is applied to the assessment of all effects and reasoned justification is presented in respect of the findings of each case.

66. The geographic extent over which the landscape and visual effects will be experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude but instead is used in determining the extent in which a particular magnitude of change is experienced and the extent of the significant and non-significant effects. The extent of the effects will vary depending on the specific nature of the development proposed and is principally assessed through analysis of the geographical extent of visibility of the Development across the visual receptor.

67. The extent of effects on views is based on the following factors:

- The extent of a receptor (a road, footpath or settlement, for example) from which the Development may be seen; and
- The extent to which the change would affect views, whether this is unique to a particular viewpoint or if similar visual changes occur over a wider area represented by the viewpoint.

68. The duration and reversibility of effects on views are based on the period over which the Development is likely to exist and the extent to which the Development will be removed and its effects reversed at the end of that period. Duration and reversibility are not incorporated into the overall magnitude of change, and may be stated separately in relation to the

assessed effects. Due to the in perpetuity nature of this Development (and the Operational Rigged Hill Windfarm), the operational effects of it will be long term and permanent.

69. GLVIA3[11] defines 'significance' as "a measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic" (GLVIA3 glossary). It does not define what may constitute a 'significant' effect or provide thresholds that indicate where effects would become significant rather than not significant, but states that "*there are no hard and fast rules about what effects should be deemed 'significant'*" (paragraph 3.32). This is further expanded upon in paragraph 5.54 (in relation to landscape effects), which states that "*significance can only be defined in relation to each Development and its specific location. It is for each assessment to determine how the judgements about the landscape receptors and landscape effects should be combined to arrive at significance and to explain how the conclusions have been derived*".

70. GLVIA3[11] also states that the assessment of significance is "*an evidence-based process combined with professional judgement*" (paragraph 3.23). Professional judgement is, as acknowledged in GLVIA3, a very important aspect of LVIA, and it is important to remember that "*even with qualified and experienced professionals there can be differences in the judgements made. This may result from using different approaches or different criteria, or from a variation in judgements based on the same approach and criteria*" (GLVIA3 paragraph 2.25).

71. In OPEN's methodology, a significant effect occurs where the Development will provide a defining influence on a landscape element, landscape character receptor or view. A not significant effect occurs where the effect of the Development is not material, and the baseline characteristics of the landscape element, landscape character receptor, view or visual receptor continue to provide the definitive influence. In this instance, the Development may have an influence but this influence will not be definitive. Significant cumulative landscape and visual effects arise where the addition of the Development to other windfarms leads to windfarms becoming a prevailing landscape and visual characteristic.

72. It is important to remember that the assessment of significance in LVIA terms, as required by The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 and set out in GLVIA3, does not provide any indication of the 'acceptability' of the Development, and that the occurrence of significant effects does not in any way imply that a Development would be 'unacceptable'. As stated in GLVIA3[11] (page 153), the LVIA text should "*be impartial and dispassionate, presenting information and reasoning accurately and in a balanced way, and making clear where statements are based on the author's judgement*."

73. It is widely acknowledged that commercial-scale windfarm development will almost inevitably give rise to effects that are assessed as being significant in EIA terms, and this does not render this type of development unacceptable. Planning Policy Statement 18[21] acknowledges the nature of landscape and visual effects of windfarms (paragraph 4.14), stating that "*of all renewable technologies, wind turbines are likely to have the greatest visual and landscape effects*" and that "*the Department recognises that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved, and that some of these impacts may be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines*."

5.2.6.4 Nature of Effects

74. The 'nature of effects' relates to whether the effects of the Development are positive, neutral or negative. Guidance provided in GLVIA3[11] states that "*thought must be given to whether the likely significant landscape and visual effects are judged to be positive (beneficial) or negative (adverse) in their consequences for landscape or for views and visual amenity*", but does not provide an indication as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and reasoned professional opinion.

75. In relation to many forms of Development, the ES will identify positive or negative effects under the term nature of effect. The landscape and visual effects of windfarms are difficult to categorise in either of these brackets as, unlike other disciplines, there are no definitive criteria by which these effects can be measured as being categorically beneficial or adverse. For example, in disciplines such as noise or ecology it is possible to identify the nature of the effect of a windfarm by objectively quantifying its effect and assessing the nature of that effect in prescriptive terms. However, this is not the case with landscape and visual effects, where the approach combines quantitative and qualitative assessment.

[21] Department of the Environment (2009) Planning Policy Statement 18: Renewable Energy.

76. OPEN will define positive, neutral and negative effects as follows:

- Positive effects contribute to the landscape and visual resource through the enhancement of desirable characteristics or the introduction of new, beneficial attributes. The removal of undesirable existing elements or characteristics can also be positive, as can their replacement with more appropriate components;
- Neutral effects occur where the Development neither contributes to nor detracts from the landscape and visual resource and is accommodated with neither positive nor negative effects, or where the effects are so limited that the change is hardly noticeable. A change to the landscape and visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation; and
- Negative effects are those that detract from or weaken the landscape and visual resource through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its characterisation.

77. OPEN generally adopts a precautionary approach which assumes that significant landscape and visual effects will be weighed on the negative side of the planning balance, although positive or neutral effects may arise in certain situations.

5.2.7 Duration and Reversibility of Effects

78. The effects of the Development are of variable duration, and are assessed as short-term/ long-term and permanent/ reversible. It is anticipated that the Development will remain on site 'in perpetuity'. The turbines, meteorological masts, site access tracks, substation and battery storage unit will be apparent during this time, and these effects are considered to be long-term.

79. Other infrastructure and operations such as the construction processes and plant (including tall cranes for turbine erection) and construction compounds will be apparent only during the initial construction period of the Development and are considered to be short-term effects.

80. The reversibility of effects is variable. The most apparent effects on the landscape and visual resource, which arise from the presence of the turbines, are reversible as the turbines can be removed, as can the substation and permanent meteorological masts. The effects of the tall cranes and heavy machinery used during the construction and decommissioning periods are also reversible.

81. The access tracks for the Operational Rigged Hill Windfarm will be reused as far as possible, or will otherwise be regraded and reinstated with local vegetation. Turbine foundations and underground cabling will be left in-situ below ground with no residual landscape and visual effects.

5.3 Baseline Environment

5.3.1 Site

82. The Operational Rigged Hill Windfarm occupies the summit of Rigged Hill (377 m AOD), which takes the form of a north south running ridge. The operational wind turbines and existing infrastructure associated with the Operational Rigged Hill Windfarm will form part of the baseline conditions considered in the assessment.

83. The land cover of the Site consists of rough unimproved grasses, giving the upper elevations of the hill an open moorland character. Hill sheep farming is the principal land use, alongside the generation of renewable energy. The lower slopes comprise improved fields of pasture grazed by sheep and cattle. Other developments on the flatter western part of the Site include two large farmsteads with tracks leading to these from the minor roads.

5.3.2 Site Context

84. The ridge of Rigged Hill is set between Temain Hill (376 m AOD) and Boyd's Mountain (329 m AOD). Donald's Hill (399m AOD) is located further south and is the most prominent of the hills on this upland area due to its distinctive landform, whilst Tibaran Mountain (303 m AOD) extends the upland area further to the east. The western slopes of the upland rise steeply and relatively evenly from the pastoral low lying area to the west with the steepest of these forming the western flank of Donald's Hill. The rising land has dictated a transition in landuse and landscape pattern from small pastoral/arable fields in the low-lying areas to larger pastures extending up the hill slopes and becoming gradually less fertile. The upper grass moorland areas have little in the way of subdivision. To the east of Rigged Hill, the slopes are gentler and less even. Coniferous forestry covers large parts of the north-easterly upper slopes. There are two telecommunications masts located near to Temain Hill and the minor road which passes over the upland. Quarrying is also a feature of this upland area.

85. The land to the west and east of the site is low lying. The River Roe runs in a north south direction to the west, draining into Lough Foyle. The River Bann runs broadly north to south in the east between Lough Neagh and the coast near Coleraine. The low-lying areas are generally settled with agricultural subdivision and scattered urban areas connected by numerous roads forming a fine network. The main roads through the area are the A2 between Derry / Londonderry, Limavady and Coleraine and along the coast to Ballycastle and the A6 between Derry / Londonderry and Antrim through the Sperrin Mountains. Emanating from Coleraine, there is also the A37 to Limavady, the A29 which extends north to the coast and south to Cookstown, the A54, which runs south to the A6 near Magherafelt and the A26 which runs south-east to Ballymena.

86. A railway line runs along the coast from Derry / Londonderry to Coleraine and Port Rush and southwards to Ballymena.

87. The nearest large settlement is Limavady, which is located approximately 6.2 km west-north-west from the Development. Coleraine and Macosquin are located approximately 13.2 and 10.5 km to the north-east respectively, whilst Garvagh is approximately 8.9 km to the south-east and Dungiven 11.3 km to the south-west. Derry / Londonderry lies to the west on the edge of the study area. The village of Drumsurn lies at a distance of approximately 3.5 km to the south-west, and Ringsend is approximately 4.5 km to the east-north-east. The historical land ownership pattern of this area is based on the land being divided into small plots. This has led to a dispersed settlement pattern, whereby individual dwellings occur frequently across the landscape in scattered farmsteads and residences with small clusters and ribbon development along the many roads.

88. The Sperrin Mountains lie to the south and south-west of the site with moderately high ground, extending northwards from the Mountains to Binevenagh Mountain in the north of the study area near the coast. The higher ground provides visual containment, skyline features and vantage points from which to gain views over the wider area. The land use pattern changes from a predominance of arable farmland to a predominance of commercial forestry and open moorland. The forestry encloses large parts of this landscape such that there is little intervisibility or association between one area and the next.

89. The North Sperrins Scenic Route is located to the south of the Development Site and would obtain views towards it at distances of around 4 km at its closest point. There is a viewpoint at Legavannon Pot which looks in the direction of the Development. A further viewpoint and parking area is located further north on the B180.

90. The Ulster Way Walking Route runs through the Operational Rigged Hill Windfarm and generally runs north to south through the study area and then west to east through the Sperrins.

91. The north-western part of the study area is formed by Lough Foyle with the Inishowen peninsula of the Republic of Ireland (RoI) beyond.

92. As well as the Operational Rigged Hill Windfarm, the higher areas of land to the west and north of the Development are characterised by large scale windfarm development. Two further windfarms are under construction to the south and a further four new windfarms and one extension have been consented to the east, south-east and south of the Development Site. Also, within the lower lying areas there are numerous moderately large single turbines and other smaller turbines often associated with farmsteads, industry or domestic dwellings.

5.3.3 Landscape Character

93. Policy RG11 of the Regional Development Strategy[22] notes the importance of landscape character in planning:

94. "*Landscape character is what makes an area unique. It is defined as "a distinct, recognisable and consistent pattern of elements, be it natural (soil, landform) and/or human (for example settlement and development) in the landscape that makes one landscape different from another, rather than better or worse". We can only make informed and responsible decisions on the management and planning of sustainable future landscapes if we pay proper regard to their existing character. By understanding how places differ we can also ensure that future development is well situated, sensitive to its location, and contributes to environmental, social and economic objectives. The Northern Ireland Landscape Character Assessment 2000 provides valuable guidance on local landscape character and scenic quality*."

95. All of the NI landscape was classified and published in a document, The Northern Ireland Landscape Character Assessment (NILCA) 2000[23].

[22] Department for Regional Development (March 2012) Regional Development Strategy 2035

96. Landscape character information is based on the landscape character areas (LCAs) that are described in the Supplementary Planning Guidance (SPG) document entitled 'Wind Energy Development in Northern Ireland's Landscapes'[24]. This 2010 report in turn draws from the LCAs that were originally identified in 'NILCA[25]. The NI landscape was subdivided into 130 different landscape character areas, each with a distinctive character. Causeway Coast and Glens Borough Council comprises 24 Landscape Character Areas (LCAs), some of these are shared with neighbouring districts. The NILCA also identifies Areas of Scenic Quality. They represent a second tier (below AONBs) in the hierarchy of landscape classifications.

97. The lower Bann Valley is the only Area of Scenic Quality within the Borough, and this has been incorporated into Binevenagh AONB.

98. The LCAs that cover the study area shown in relation to the ZTV are shown in **Figure 5.2** of Appendix B. The landscape of the area is characterised by north to south running swathes of broadly similar landscapes following the pattern of the landform and valley structure. There are some pockets of differing character and a transition into different areas as one moves from north to south through changes in elevation.

99. The immediate landscape setting of the Development and the wider area to the north, east and south is covered by the Binevenagh LCA which is a north to south running area that runs from the coast in the north to near the Glenshane Pass in the south.

100. The Key Landscape and Visual Characteristics and Values are identified in the SPG[24]. In relation to windfarm development the document advises that the overall sensitivity is "High to medium" and provides the following advice:

101. "*Much of this landscape is of extreme sensitivity due to its iconic, landmark character and very wide visibility. However lower and less prominent sections of the escarpment, and areas where there is extensive forestry, might be somewhat less sensitive to wind energy development*."

102. In relation to the location, siting, layout and design considerations the following information is provided:

103. "*The relatively large scale and strong horizontal form of the escarpment means that certain locations in this LCA may be well suited to wind energy developments. The lower central section of the LCA may be better suited to wind energy development in landscape and visual terms than other areas. Siting in association with forestry may be beneficial.*

104. *Care should be used to avoid adverse impacts on the extremely sensitive northern or southern ends of the escarpment. Particular care should be taken to avoid adverse impacts on the distinctive skylines of Binevenagh, Keady Mountain, Donald's Hill and Benbradagh and on the settings of natural and cultural heritage features and recreational resources.*

105. *At the time of assessment there was one operational wind farm in this LCA, at Rigged Hill (10 turbines of 60m). In addition there were operational and consented wind farms at Altahullion (total 24 turbines) around 15km south-west of Rigged Hill. Further wind energy development (unless closely associated with existing sites) could give rise to issues of cumulative impact. Transboundary wind farms in County Donegal are 30km or more away and unlikely to give rise to major landscape issues here. There may be seaward issues to consider in future*."

106. To the east of the Binevenagh LCA is the Eastern Binevenagh Slopes LCA with the Glenshane slopes LCA extending further to the south. These are transitional areas between the higher moorland/forestry and the lower more settled land to the east. The eastern part of the study area, lying within 15km of the Development Site and beyond is covered by the more settled, agricultural and populated landscape of the Coleraine Farmland LCA in the north and the less settled Garvagh Farmland further south. The LCAs of the Lower Bann Floodplain and Lower Bann Valley sit to the south and east of these respectively. They are relatively flat with linear roads through them and ribbon development in the south with a more dispersed settlement pattern in the north within the Floodplain.

[23] Department of Agriculture, Environment and Rural Affairs (2000) The Northern Ireland Landscape Character Assessment
[24] Northern Ireland Environment Agency (2010) Wind Energy Development in Northern Ireland's Landscapes
[25] Department of Agriculture, Environment and Rural Affairs (2000) The Northern Ireland Landscape Character Assessment

107. The lower lying area to the west of the Binevenagh LCA is the Roe Basin LCA, which also forms part of the immediate landscape setting for the Development (within 2 km). This is a broad, predominately agricultural valley with some larger settlements. The SPG[24] notes that the " *LCA is strongly influenced by prominent west-facing skylines of basalt escarpment, notably at Binevenagh, Keady Mountain, Donald's Hill and Benbradagh and by Sperrin Mountain tops south of Dungiven. Important internal skyline south of Limavady where land rises to over 100m. Setting of Limavady includes deep wooded section of River Roe while Dungiven is surrounded by attractive glens that also form the setting to the Sperrin AONB*."

108. Further west from north to south are the Loughmore Hills, the Sperrin Foothills and the Sperrin Mountains LCAs. These elevated areas provide containment and enclosure to the Roe Basin to the east and the further areas beyond.

109. The coastal landscape around Lough Foyle is covered by the Lough Foyle Alluvial Plain and the Magilligan Lowlands LCAs.

5.3.4 Landscape Designations

110. The site does not lie within any landscape planning designations. The Landscape Designations which occur in the 30 km study area include Areas of Outstanding Natural Beauty (AONBs) and Registered Gardens. These are shown in **Figure 5.3** of Appendix B and described below.

5.3.4.1 Areas of Outstanding Natural Beauty

111. The Development lies between the Sperrin AONB to the south (5.8 km) and Binevenagh AONB in the north (2.2 km). The Causeway Coast lies at a greater distance of 22.1 km to the north-east. The Sperrin AONB covers an extensive upland area that spans across much of the south-western part of the study area. The Binevenagh AONB is smaller and covers an upland area that is strongly associated with the coast and Lough Foyle. The Causeway Coast AONB is strongly associated with the coast and views out over the sea.

112. The AONB designation aims to protect and enhance the landscape quality of the area as well as to promote enjoyment of the landscape by the general public. Whilst views from these locations will be of heightened sensitivity, windfarm development has not been prohibited from occurring within AONBs in Northern Ireland. This includes windfarms in both of these AONBs.

113. AONBs are designated by the Department of the Environment for Northern Ireland (DoENI) and are of national importance. The policy context for AONBs is described in 'Planning Policy Statement 2 Natural Heritage'[26], which states that AONBs are designated "*primarily for their high landscape quality, wildlife importance and rich cultural and architectural heritage*." Policy NH 6 is specifically worded for AONBs, and states that:

114. "*Planning permission for new development within an Area of Outstanding Natural Beauty will only be granted where it is of an appropriate design, size and scale for the locality and all the following criteria are met:*

115. *a) the siting and scale of the proposal is sympathetic to the special character of the Area of Outstanding Natural Beauty in general and of the particular locality; and*

116. *b) it respects or conserves features (including buildings and other man-made features) of importance to the character, appearance or heritage of the landscape; and*

117. *c) the proposal respects:*

- *local architectural styles and patterns;*
- *traditional boundary details, by retaining features such as hedges, walls, trees and gates;*
- *and local materials, design and colour*."

118. Explanatory text for this policy goes on to say the following:

[26] Department of the Environment Northern Ireland (2013) Planning Policy Statement 2 Natural Heritage. Available online at: https://www.planningni.gov.uk/index/policy/planning_statements/pps2.htm [Accessed on 12/07/2017]

119. "*This policy requires development proposals in Areas of Outstanding Natural Beauty (AONB) to be sensitive to the distinctive special character of the area and the quality of their landscape, heritage and wildlife.*

120. *The quality, character and heritage value of the landscape of an AONB lies in their tranquillity, cultural associations, distinctiveness, conservation interest, visual appeal and amenity value*."

121. In assessing proposals, account will be taken of the Landscape Character Assessments and any other published guidance such as countryside assessments produced as part of the development plan process, as well as AONB Management Plans and local design guides.

122. It should be noted that the Development does not lie within an AONB and therefore will only affect their character through its visibility from within the AONBs. **Figure 5.5** of Appendix B illustrates that much of the area that is shown to have theoretical visibility of the Development currently has visibility of the Operational Rigged Hill Windfarm. Despite the Development being located relatively close to the AONB boundaries, visibility of the turbines across the wider AONB areas is restricted to the closer slopes facing towards the Development and higher landform beyond. In views from both of the AONBs, operational (or under construction) windfarms, sited within the intervening areas, are seen at closer ranges.

5.3.4.2 Areas of High Scenic Value (AoHSV)

123. These areas are designated through policies contained in the Derry Area Plan[27] and the Magherafelt Area Plan[28].

124. Around Derry / Londonderry the Area Plan identifies Areas of High Scenic Value on both banks of the Foyle north and south of the City and the Faughan Valley south east of Drumahoe to Burntollet Bridge. The policy which provides protection for these areas is ENV 1: Areas of High Scenic Value (AoHSV), which states that:

125. *'Proposals for development which would adversely affect or change either the quality or character of the landscape within the Areas of High Scenic Value will not normally be permitted*.'

126. Areas of High Scenic Value within the Magherafelt area are designated on the West Lough Neagh Shores and the Slieve Gallion Slopes.

127. Policy CON 1: Areas of High Scenic Value within the Magherafelt Area Plan provides the protection for these areas as follows:

128. *'Within designated Areas of High Scenic Value planning permission will not be granted to development proposals that would adversely affect the quality and character of the landscape. A Landscape Analysis must accompany development proposals in these areas to indicate the likely effects of the proposal on the landscape. Planting and retention of indigenous tree species must be an integral part of these proposals and the site must be large enough to accommodate any mitigation measures identified. Where feasible the reuse of traditional buildings will be required*.'

129. This policy provides protection only from development proposals located within the AoHSV and not development occurring beyond its boundaries; therefore, these areas are not considered further.

5.3.4.3 Registered Gardens

130. The effects on visual amenity from publicly accessible Registered Gardens contained in the Register of Parks, Gardens and Demesnes of Special Historic Interest (2007) will be considered within the LVIA. The effects on the Registered Properties as a cultural heritage asset will be assessed in the Cultural Heritage Chapter of the ES.

131. There are 12 Registered Gardens within 15 km of the Development and a further 29 in the 15-30 km range. The closest Register Gardens to the Development are Drenagh (or Fruithill), Roe Valley Park and Dog Leap.

[27] Department of the Environment (2011). Derry Area Plan. Available online at: https://www.planningni.gov.uk/index/policy/development_plans/devplans_az/derry2011-adopted-plan.pdf [Accessed on 10/07/2017]
[28] Department of the Environment (2015). Magherafelt Area Plan. Available online at: https://www.planningni.gov.uk/index/policy/development_plans/devplans_az/magherafelt_web2.pdf [Accessed on 10/07/2017]

132. Of the Registered Gardens and Supplementary Sites lying within a 20 km range, the following have some public access reported in the Register:

- Registered Gardens:
  - Walworth - Walled garden open by arrangement;
  - Downhill;
  - Guy Wilson Daffodil Garden - garden open by arrangement;
  - Knockan/Ash Park- house private, garden open by arrangement;
  - O'Hara Brook – house private, gardens open occasionally to public; and
  - Leslie Hill - House private - part of site open to public as Heritage Farm Park.

- Supplementary sites:
  - Roe Valley Park; and
  - Dog Leap - Gardens open for wedding photographs.

5.3.5 Principal Visual Receptors

133. A number of visual receptors such as settlements and travel routes will be considered in the assessment, as views from them may be affected by the Development. It is not possible to consider every potential visual receptor in the study area due to the extent of ground that it covers; therefore, the assessment concentrates on the 'principal' visual receptors that may gain visibility of the Development. Principal visual receptors are shown in relation to the ZTV on **Figure 5.4** of Appendix B.

5.3.5.1 Settlements

134. The settlements considered in this assessment are drawn from the Settlement Development Limits (SDLs) dataset as provided by the Northern Ireland Statistics and Research Agency (NISRA). SDLs are a statistical classification and delineation of settlements in Northern Ireland as defined by the Planning Service. SDL boundaries are available for settlements with a population of greater than 1,000; therefore, the settlements included in this assessment are those that have a population of over 1,000 people.

5.3.5.2 Routes

135. Routes include roads, railway lines, national walking routes and national cycle routes. Routes included as principal visual receptors in the assessment are determined by four criteria:

- The proximity of the route to the Development;
- The extent to which the route traverses the study area or extends across a notable part of it;
- The importance of the route in terms of recognition, volume of users and usage; and
- The potential for the Development to contribute to cumulative effects along the route.

5.3.5.3 Viewpoints

136. **Table 5.3** presents the initial list of potential viewpoints. These have been identified through reference to the ZTV with viewpoints shown in **Figure 5.4** of Appendix B and have been agreed with the Council during pre-application discussions. In selecting viewpoints, a range of receptor types and distances has been sought. LVIAs for other windfarms in the area (Smulgedon and Glenconway) have also been reviewed in order to ascertain viewpoints that have been approved previously and that may also give rise to cumulative effects.

137. Those viewpoints marked with an asterisk (*) are those considered to be most important in relation to the design of the windfarm layout since most represent static and/or close range receptors.

Table 5.2: Representative Viewpoints

No.	Viewpoint	Grid Reference	Distance (km)	Representative
1*	Terrydoo Road	273397, 420868	1.3	Representative of residents, pedestrians and road-users.
2*	Temain Road to Aghansillagh and Temain Hill	272999, 419369	1.8	Representative of residents, pedestrians and road-users.
3*	Edenmore Road, Limavady	268900, 421601	5.8	Representative of residents, pedestrians and road-users.
4*	Roe Park Resort driveway, Limavady	266848, 421745	7.9	Representative of views from hotel and golf resort, pedestrians and road-users. Used in Smulgedon LVIA. Cumulative windfarms.
5*	Drumsurn, playing field and play park	272104, 417241	3.5	Representative of residents, pedestrians and users of playing field/park. Cumulative windfarms.
6*	Ringsend	279932, 422133	4.6	Representative of residents, road users. Cumulative windfarms.
7*	Brockaghboy, Glenullin Bog Viewpoint	280756,412824	1.8	Representative of residents, Glenullin resource Centre users, close to North Sperrins Scenic Route. Cumulative windfarms.
8	A29 south of Garvagh	283875, 414749	4.3	Edge of settlement residential receptors and road-users. Used in Smulgedon LVIA. Cumulative windfarms.
9	Legavallon Road	271732, 412849	4.1	Representative of residents, pedestrians and road-users on North Sperrins Scenic Route. Cumulative windfarms.
10	Benbradagh Mountain	272196, 411336	4.6	Representative of hill top view in Area of Outstanding Natural Beauty. Used in Smulgedon LVIA. Cumulative windfarms.
11*	Polly's Brae Road junction with B192	267263, 418206	7.6	Representative of residents, pedestrians and road-users. Used in Smulgedon LVIA. Cumulative windfarms.
12	A2, north of Limavady	267975, 426452	6.6	Representative of road-users. Used in Glenconway LVIA. Cumulative windfarms.
13	Binevenagh Mountain, minor road and NCR	270555, 429224	4	Representative of road users, users of National Cycle Router. Visitors to AONB. Cumulative windfarms.
14	Wheatsheaf Road, Coleraine	283382, 432991	8.8	Representative of residents and road-users.
15	Seacon Townland, A26 near Ballymoney	290647, 428625	14.8	Representative of road users and residents. Used in Smulgedon LVIA. Cumulative windfarms.
16	Garvagh Road, Dungiven	269377, 409927	7.6	Representative of road users and residents. Cumulative windfarms.
17	Scotchtown Road, Magilligan	265704, 430282	9	Car park at southern end of strand, within Binevenagh AONB with view of Binevenagh escarpment. Used in Smulgedon LVIA. Cumulative windfarms.
18	Greenbank Church, Quigley's Point, ROI.	250971, 430632	23.7	Representative of residents, pedestrians and road-users. Inishowen 100 scenic driving route, gathering point for receptors near community facility. Used in Smulgedon LVIA. Cumulative windfarms.

5.3.6 Cumulative Windfarms

138. The cumulative context comprises other commercial windfarms of various scales, as well as single turbines. The windfarms are shown on **Figure 5.6** of Appendix B with single turbines mapped where they lie within a 5 km radius of the Development. Dunmore and Dunbeg operational windfarms lie to the north at a distance of approximately 6 km. Their location within a lower lying area between Binevenagh Mountain and Keady Mountain means that their visibility is not widespread but they are more prominent in the north of the study area. They are located within the Binevenagh AONB. The under construction Smulgedon Windfarm is located at approximately 4 km to the south of the Development. Again, higher land to the north and south limit its visibility. Glenconway and Altahullion are approximately 12.5 km from the Development Site and a key characterising feature in views to the west.

139. The Brockaghboy Windfarm is under construction further to the south-east within the Sperrin AONB.

140. If the Craiggore and Upper Ballyrogan windfarms are constructed, they will be apparent at approximately 2 km to the south and 4 km to the south-east of the Development respectively. The Development's interaction with these windfarms in views will be key in defining where significant cumulative effects may arise.

5.4 Key Sensitivities

5.4.1 Landscape Sensitivities

141. The main landscape effects will arise through the direct alteration of the landscape pattern or features, e.g. through the addition or removal of these. Beyond this landscape character effects will only arise through visibility of these changes as part of the wider context.

142. The most sensitive areas of the landscape within the study area are the scenic areas or landscapes recognised for their value through designation, particularly those areas which have very little development, wildness characteristics, and landscapes with small scale features which can result in detrimental scale comparisons with large turbines. Proximity to the Development and its actual visibility in key views will also determine sensitivity to the changes proposed.

143. The landscape character assessment will focus on areas within a 15 km radius, as significant effects on landscape character are unlikely to occur beyond this range. This is due to the landscape character of the study area and the fact that there is an existing windfarm on the site which is already visible from large parts of the landscape (**Figure 5.5** of Appendix B). This is part of the baseline character of the Site, and views towards it from other landscape character areas are extant.

5.4.2 Visual Sensitivities

144. The most sensitive visual receptors are those where the occupation of the viewers means that they will have regular and sustained visibility of the Development. Whether the views are valued through a landscape planning designation also has a bearing on their sensitivity to change. The degree to which people moving through the landscape are doing so with the purpose of enjoying the views, as well as their speed of travel are also factors that affect sensitivity with the slowest moving receptors (walkers) being the most sensitive.

145. All of the viewpoints will have figures prepared for them. It is considered that viewpoints and visual receptors beyond the 20 km range would not be significantly affected by the Development, as such viewpoints beyond 20 km have been scoped out of the assessment.

5.4.3 Cumulative Sensitivities

146. There are numerous operational, under construction and consented windfarms as well as single turbines in relatively close proximity to the Development. Whilst the Operational Rigged Hill Windfarm contributes to the cumulative windfarm effect within the area its comparatively small-scale turbines means that relative to other, larger windfarms its contribution to this is limited. The use of larger turbines near the edge of this upland ridge and in close proximity to large numbers of visual receptors, will increase its contribution to the cumulative effect.

147. The Operational Rigged Hill Windfarm turbines are currently notably smaller than the other windfarms that are operational, under construction or consented within the local area. This divergence of scales is apparent and the smaller turbines appear incongruous. The schemes that have been submitted as applications are also larger in scale and will be considered within the cumulative assessment.

5.5 Scoped In Effects

148. The assessment of key sensitivities presented in **Section 5.3.2** has highlighted those landscape and visual receptors that have potential to undergo significant effects and, therefore, are required to be fully assessed in the LVIA. **Table 5.3** sets out the landscape and visual receptors that it is proposed are scoped in to the LVIA. The assessment process and further evidence may identify that some of these landscape and visual receptors can be scoped out, in which case agreement would be sought on the updated list of receptors to be assessed.

Table 5.3: Receptors to be Scoped into the LVIA

Receptor	Distance to nearest turbine (km)	Subject to ZTV- theoretical visibility?	Need to assess effects further within LVIA?
Landscape character areas			
Binevenagh	0	Yes	Yes
Roe Basin	0.6	Yes	Yes
Eastern Binevenagh Slopes	3.1	Yes	Yes
Glenshane Slopes	7.9	Yes - generally over north and west facing outer slopes only.	Yes - coincides with higher value AONB designated area at relatively close proximity.
Landscape planning designations			
Binevenagh AONB	2.2	Yes	Yes
Sperrin AONB	5.8	Yes	Yes
Dog Leap RGSS	6.6	Yes - limited extents	Yes
Principal visual receptors			
Drumsurn village	3.5	Yes	Yes
Ringsend village	4.5	Yes	Yes
Limavady	5.6	Yes	

Receptor	Distance to nearest turbine (km)	Subject to ZTV- theoretical visibility?	Need to assess effects further within LVIA?
Garvagh	8.8	Yes	Yes- although ZTV limited to high ground areas or parts of settlement that will not have actual visibility due to intervening woodland and built development.
Dungiven	10.7	Yes	Yes
Ballykelly	11.1	Yes	Yes
Coleraine	12.2	Yes - western edge and across much of settlement on east side of River Bann.	Yes- views from western edge of town may give rise to significant effects. Views from east of River Bann unlikely to give rise to significant effects due to intervening urban screening and influences.
Kilrea	17.6	Yes	Yes- views from north-western edge of town may give rise to significant effects. Views from other parts of settlement unlikely to give rise to significant effects due to intervening urban screening and influences.
Ballymoney	18.8	Yes	Yes - views from western edge of town may give rise to significant effects, although extensive woodland around Leslie Hill Registered Garden reduces the potential for actual visibility from this edge. Views from other parts of settlement unlikely to give rise to significant effects due to intervening urban screening and influences.
Port Stewart	16.7	Yes	Yes- views from south-western edge of town may give rise to significant effects. Views from other parts of settlement unlikely to give rise to significant effects due to intervening urban screening and greater influence and focus on sea views.
B66 (Limavady to Aghadowey)	2	Yes	Yes
B64 (Dungiven to Garvagh)	4.1	Yes	Yes - although closest parts have limited ZTV which will be further reduced by intervening forestry.
B68 (Limavady to Dungiven)	3.2	Yes	Yes
B70 (Garvagh to Ringsend)	5.8	Yes	Yes

Receptor	Distance to nearest turbine (km)	Subject to ZTV- theoretical visibility?	Need to assess effects further within LVIA?
The North Sperrins Scenic Driving Route	4.1	Yes	Yes - although closest parts have limited ZTV which will be further reduced by intervening forestry.
National Cycle Network routes and Links within 15 km radius	6.2	Yes	Yes- NCN 93 between A6 in south and Binevenagh Mountain in the north.
The Ulster Way Long Distance Route	0	Yes	Yes

5.6 Scoped Out Effects

149. The assessment of key sensitivities presented in **Section 5.3.2** has indicated those landscape and visual receptors that do not have potential to undergo significant effects; therefore, these are not required to be further assessed in the LVIA. Should further evidence and assessment support scoping out further areas we may seek to agree this at a future date. **Table 5.4** sets out the landscape and visual receptors that are scoped out of the LVIA.

Table 5.4: Receptors to be Scoped out of the LVIA

Receptor	Reason for being scoped out
Landscape character areas beyond 15 km radius	Due to the distance to the Development and the landscape character of the study area. In particular the fact that there is an operational windfarm on the site, which is part of the baseline character and views towards it from other landscape character areas. Other operational and under construction windfarms also often occur within a similar part of long range views.
Magilligan Lowlands	Limited extents of ZTV at a range of 10.5 km or more. Key influence on character is coast and Binevenagh Mountain which are located at closer proximity.
Garvagh Farmland	ZTV shown across northern part of LCA at a range of 6.8 km or more. Extensive boundary trees and other features within the LCA and intervening areas results in wider landscape context contributing little to character of this LCA.
Loughermore Hills	ZTV shown generally across east facing slopes only. Part of LCA at a range of 7.9 km or more with site located on other side of Roe Basin. Altahullion, Glenconway and Monaboy windfarms located within this LCA and have a greater influence on landscape character than the Development.
Lough Foyle Alluvial Plain	ZTV shown across much of this low-lying area. However, LCA is characterised by its coastal location and views across Lough Foyle rather than views to the south-east towards the Development site. Extensive boundary planting regularly obscures views in this direction.
Lower Bann Floodplain	ZTV shown across much of this low lying LCA at a range of 9.7 km or more. Extensive boundary trees and other features within the LCA and intervening areas results in wider landscape context contributing little to character of this LCA.
Coleraine Farmland	ZTV shown across much of this LCA at a range of 10.8 km or more. Extensive boundary trees and other features such as urban areas located within the LCA and intervening areas results in wider landscape context of the Site contributing little to character of this LCA.
Sperrin Foothills	ZTV shown mainly across northern-eastern part of LCA at a range of 11.7 km or more. Closest parts of LCA in ZTV are not in AONB designation. The Site is located on other side of Roe Basin from this LCA, which will be characterised by closer proximity Altahullion and Glenconway windfarms.
Sperrin Mountains	LCA coincides with AONB designation. ZTV shown to occur from areas of high elevation only within this LCA at a range of greater than 12.9 km. From these locations there are numerous influences on views across the wider landscape which include the operational and under construction windfarms of Altahullion, Glenconway and Smulgedon at closer range

Receptor	Reason for being scoped out
	than the Development so that it will have a limited effect on character as part of this context.
Lower Bann Valley	ZTV shown across much of this LCA at a range of 13.3 km or more. Extensive boundary trees and other features such as settled areas located within the LCA and intervening areas results in wider landscape context of Development site contributing little to character of this LCA.
Landscape Planning Designations	
Causeway Coast AONB	Limited extent of ZTV at a ranges of over 22.1 km. Character of landscape is derived from its coastal location and views out over the sea. Development may be visible from elevated areas, however such areas will be influenced by numerous other elements within the wider context - including urban areas and trees.
Giant's Causeway and Causeway Coast World Heritage Site	Very limited extent of ZTV within this area. Character of landscape is derived from its coastal location and views out over the sea. Development may be visible from elevated areas, however such areas will be influenced by numerous other elements within the wider context - including urban areas and trees.
Areas of High Scenic Value within the Derry / Londonderry area	Distances of greater than 25 km. Limited areas lie within ZTV.
Registered Gardens and Supplementary Sites beyond 20 km radius	Due to the distance to the Development and the landscape character of the intervening parts of study area. In particular, the fact that there is an operational windfarm on the site, which is part of the baseline character and views towards it. Other operational and under construction windfarms also often occur within a similar part of long range views.
Roe Valley Park RGSS	Limited extents of ZTV at 6.5 km over higher areas (not within valley) only. Areas of ZTV coincide with wooded areas.
Downhill RG	Very limited extent of ZTV at range of 13.6km and separated from site by intervening high ground and forestry.
Anderson Park RG	Limited extent of ZTV at range of 14.9km. Separated from site by intervening urban area of Coleraine.
Guy Wilson Daffodil Park	Limited extent of ZTV at range of 15.9km. Separated from site by intervening urban area of Coleraine.
Walworth RG	Only part open to public is walled garden. Views are assumed to be contained by garden walls.
O Hara Brook RG	House private with gardens open to public on special days. In ZTV at a range of 17.2 km to west-south-west. However, key views from property orientated to the south-south-west with views in the direction of the site largely screened and filtered by intervening trees.
Leslie Hill	No public access. Heritage Farm Park closed to public in 2013.
Knockan/Ash Park	Houses private with gardens open to public by arrangement. In ZTV at a range of 16 km. Wooded perimeter or otherwise farm buildings on north-eastern extents. Open lawns and axis from house aligned to east-south-east and not in direction of Development, which lies to the north-east.
Principal visual receptors	
Settlements beyond 20 km range	Distance to Development. Operational and under construction windfarms in similar part of views. Foreground screening and influence of a range of urban and landscape features within the intervening area.
Greysteel	Limited parts of settlement within ZTV located on far side of settlement. At a range of over 17km.
Castlerock	Not in ZTV.
Maghera	Not in ZTV.
Draperstown	Not in ZTV

Receptor	Reason for being scoped out
Claudy	Not in ZTV
Rail and road routes beyond 10km (except for the North Sperrins Scenic Driving Route)	Distance to Development. Transient rather than static nature of viewers. Operational and under construction windfarms in similar part of views. Foreground screening and influence of a range of urban and landscape features within the intervening area.
National Cycle Routes and Links beyond 15 km radius	Distance to Development. Transient rather than static nature of viewers. Operational and under construction windfarms in similar part of views. Foreground screening and influence of a range of urban and landscape features within the intervening area.
National Cycle Route 93 where it passes through Coleraine	Limited extents lie within ZTV. Actual visibility reduced and influenced by intervening urban area of town.
B190	Limited extents lie within ZTV. Actual visibility reduced by intervening forestry.
Regional Cycle Routes beyond 15 km radius.	Distance to Development. Transient rather than static nature of viewers. Operational and under construction windfarms in similar part of views. Foreground screening and influence of a range of urban and landscape features within the intervening area.
Lower Bann Cycleway National Cycle Network Link within 15 km radius.	In ZTV at a range of greater than 14.7 km. Limited actual opportunity for views towards the Development due to intervening properties and planting.

5.7 Key Questions for Consultees

150. Key questions for Consultees are:

- Do Consultees agree with the proposed study areas for the LVIA and cumulative LVIA?
- Do Consultees agree with the aspects proposed to be scoped out of the LVIA?
- Do Consultees agree with the proposed viewpoint locations?
- Do Consultees agree with the proposed format for the visualisations?
- Do Consultees require any further information in order to inform your responses on the above ?
- Would Consultees be happy with a cut off for the consideration of cumulative wind farm change that is 3 months from the proposed submission date, in order for the assessment to be carried out on an agreed cumulative windfarm context?

6 Ecology

6.1 Introduction

1. The aim of the Ecological Impact Assessment (EcIA) is to identify, quantify and evaluate the effects of the Development on ecosystems and their components, including designated sites, habitats, flora and fauna. The Ecology ES Chapter will address all terrestrial and freshwater ecological receptors with the exception of birds, which will be assessed in **Section 7: Ornithology**.

2. The Ecology assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case than the decommissioning of the repowered wind turbines alone, should it be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

6.2 Suggested Methodology

4. The assessment of ecological effects will follow the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance[29], ensuring a transparent and robust approach to EcIA. These guidelines set out the process for assessment through the following:

- Collation of baseline ecological information through desk study and field surveys;
- Identification of Important Ecological Features (IEFs) including designated sites, protected / priority species and habitats;
- Identification and characterisation of effects on IEFs including positive or negative, extent, magnitude, duration, timing, frequency and reversibility;
- Assessment of cumulative effects;
- Proposals for design and mitigation measures to avoid and/or minimise effects on IEFs;
- An assessment of residual effects following the implementation of design and mitigation measures; and,
- Identification of appropriate compensation measures to offset significant residual effects and opportunities for ecological enhancement.

6.2.1 Desk Study

5. Data and information from the following sources will be reviewed:

- Plans and specifications for the Development;
- Designated sites within a 15 kilometre (km) radius of the centre of the Site (see **Figures 6.1 and 6.2** of Appendix B, obtained from the websites of the Northern Ireland Environment Agency and Joint Nature Conservation Committee;
- Records of flora and fauna within 5 km of the centre of the Site, obtained from the Centre for Environmental Data and Recording and the National Biodiversity Atlas; and
- Records of bat roosts and activity within 5 km of the centre of the Site, obtained from the Northern Ireland Bat Group.

6.2.2 Field Surveys

6. A series of walkover surveys have been carried out between April and June 2017, and will continue until October. Habitat surveys have been carried out using the methods and classification system of the Handbook for Phase 1 habitat survey[30]. Where possible, peatland habitats and any other Northern Ireland Priority Habitats have been classified using the National Vegetation Classification (NVC)[31] system.

[29] CIEEM (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. (2nd edition)
[30] Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey - a technique for environmental audit.
[31] Rodwell, J.S. (ed.) 1991. British Plant Communities. Volume 2. Mires and heath.

7. Surveys for protected / priority fauna have been undertaken during the walkover surveys, and the suitability of the habitat for other protected / priority fauna has been assessed. Particularly attention has been paid to the following species:

- All bat species;
- Badger (*Meles meles);*
- Otter (*Lutra lutra);*
- Red squirrels (*Sciurus vulgaris);*
- Smooth newt (*Triturus vulgaris);*
- Common lizard (*Zootoca vivipara);* and
- Marsh Fritillary butterfly (*Euphydryas aurinia).*

6.2.3 Active Peat Assessments

8. In recognition of the high importance afforded to active peatland in the Department of the Environment's 'Planning Policy Statement 18: Renewable Energy' (2012) and the 'Strategic Planning Policy Statement for Northern Ireland: Planning for Sustainable Development' (2015, under review), additional assessments will be undertaken for any habitats that may qualify as 'active peat'. It is acknowledged that the classification of active peat habitats can be quite complex, particularly in disturbed habitats and around the margins of peatland bodies, so a bespoke classification system has been developed for this Development, in order to provide a systematic and transparent approach. The first step will involve classifying habitats into three categories, as follows:

- Active peat: these areas support the NVC M19 community, have a peat depth of >0.5 metre (m), and has an existing hydrological regime that supports peat formation;
- Possibly active peat: these areas support modified blanket bog (including drained / oxidised areas on deep peat), wet heath or heath-mire transition habitat, have peat layers >0.5 m; and
- Not active peat: these areas do not support heath or bog vegetation, have a peat depth of <0.5 m, and/or a highly-modified hydrological regime.

9. Further assessments and fine-scale mapping will be undertaken within the 'active peat' and 'possibly active peat' zones, based on the presence of indicator plant species, the depth of the underlying peat layer, and the hydrological condition of the peatland unit (measured using dipwells). This approach was discussed with a representative of the NIEA Natural Environment Division during a meeting held on the 31st of May 2017. Further details of the approach to peat surveys are outlined in **Section 11: Hydrology, Hydrogeology, Geology, Soils and Peat**.

6.2.4 Bats

10. Reference has been made to the 3rd edition of the Bat Conservation Trust (BCT) guidelines[32] in determining the approach to bat surveys. It is noted that Chapter 10 regarding assessments of windfarm developments of the 3nd edition BCT guidelines is still to be published and therefore all surveys for the coming season will be carried out in accordance with the 2nd edition [33] guidelines.

11. The Site is located in open, upland moorland, and the only linear habitat feature of value to bats is the conifer plantation on its northern and eastern boundary. There are no potential roost features within 1 km of the Site and overall the Site is considered to have low suitability for bats. Based on the survey effort for a low-risk site in Table 10.2 of the BCT 2nd edition guidelines, automated detector surveys will be undertaken for at least five nights during each of the three survey seasons (spring, summer and autumn), plus a transect walk using a hand-held detector in each season. To ensure that there will be sufficient data to assess potential operational effects on bats throughout the year, the Applicant has committed to undertaking at least ten nights of surveys in each season and this could be increased if higher levels of bat activity are recorded than expected.

12. Six static detectors will be placed at ground level, and a seventh will be placed at a height of approximately 50 m on the meteorological mast (installed in July 2017). For the first set of surveys in spring 2017 the bat detectors were placed in a range of different habitat types throughout the Site, as follows:

[32] Collins, J. (ed.) (2016). *Bat Surveys For Professional Ecologists: Good Practice Guidelines* (3rd edition)
[33] Hundt, L. (ed.) (2012). *Bat Surveys: Good Practice Guidelines document.* (2nd edition)

- Detector RH2 was placed at the forest edge in order to assess activity along this linear feature;
- Three detectors were placed at varying distances from the forest edge - RH4 (100 m), RH1 (150 m) and RH6 (200 m) in order to assess the range at which bats may fly from the edge;
- RH4 and RH6 were placed near the base of operational turbines;
- RH3 and RH5 were placed in open ground on the lower plateau; and
- RH7 will be attached to the met mast, and will provide a comparison with the ground-level data from RH6.

13. Once the Development layout has been determined, the siting of detectors will be adjusted in order to focus on the proposed turbine locations. The bat survey methods were discussed with a representative of the NIEA Natural Environment Division during a meeting held on the 31st of May 2017.

6.2.5 Ecological Impact Assessment

14. Based on the information collected during the desktop and walkover surveys, an ecological value will be assigned to each feature based on its conservation status at different geographical scales. For example, a site may be of national ecological value for a given species if it supports a significant proportion (e.g. 5%) of the total national population of that species. It is accepted that any development will have some negative effects on the receiving environment, but the significance of the effect will depend on the value of the ecological features that would be affected. The following is outlined in the CIEEM guidelines: "*One of the key challenges in an EcIA is to decide which ecological features (habitats, species, ecosystems and their functions/ processes) are important and should be subject to detailed assessment. Such ecological features will be those that are considered to be important and potentially affected by the project. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to effects from the development, and that will remain viable and sustainable*[29]." Therefore, the EcIA will focus only on Important Ecological Features (IEFs), i.e. those that are of local value or higher, or that receive legal protection. Features of negligible ecological value (e.g. species-poor grasslands) are not considered to be material in decision making, so they will be scoped out of the impact assessment.

15. Potential direct, indirect or cumulative effects on ecological features can be described in relation to their magnitude, extent, duration, reversibility and timing/frequency, as outlined in the CIEEM (2016) guidelines[29]. Depending on the type of effect and the sensitivities of the IEFs, effects will be determined to be significant or not significant. The following definitions are provided in the CIEEM guidelines[29]: "*A significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project*". "*For the purpose of EcIA, a 'significant negative effect' is an effect that undermines biodiversity conservation objectives for 'important ecological features', or for biodiversity in general*." Where significant effects are identified, measures will be taken to avoid, minimise or compensate for such effects. Based on these measures, the impact assessment will be repeated, and any residual effects will be outlined.

6.3 Baseline

6.3.1 Environmental Setting

16. The Operational Rigged Hill Windfarm is situated on the crest of Tibaran Mountain, between the towns of Limavady and Ringsend in Derry / Londonderry. The Site includes the Operational Rigged Hill Windfarm and additional lands on the western slope of the hill. The landscape is characterised by conifer plantations, moorland and heathland, while the lower slopes are predominantly improved agricultural grasslands.

6.3.2 Designated Sites

17. The Site Boundary as shown in **Figure 2.1** of Appendix B is not within or adjacent to any sites that are designated for nature conservation. Details of Natura 2000 sites (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) within 15 km of the centre of the Site are provided in **Figure 6.1** of Appendix B and **Table 6.1.** Sites of national importance (Areas of Special Scientific Interest (ASSIs) and National Nature Reserves (NNRs)) are presented in **Figure 6.2** of Appendix B and **Table 6.2**. Potential pathways (e.g. hydrological connections) for indirect effects on each designated site are discussed in the tables.

Table 6.1: Designated Sites of European Importance (Natura 2000 sites) within 15 km of the Site

Site name	Distance	Qualifying Interests	Potential pathways for effects
River Roe & Tributaries	3.1 km north	**Annex I Habitats:** • Watercourses • Old sessile oak woodlands **Annex II Species:** • Otter *(Lutra lutra)* • Atlantic salmon (*Salmo salar)*	Indirect hydrological connection via the Castle River.
Carn / Glenshane Pass SAC	9.1 km south	**Annex I Habitats:** • Blanket bog	None
Binevenagh SAC	9.2 km north	**Annex I Habitats:** • Species-rich *Nardus* grasslands • Calcareous scree	None
Lough Foyle SPA	11 km north-west	**Special Conservation Interests:** • Light-bellied brent goose (*Branta bernicla hrota)* (wintering) • Whooper swan (*Cygnus cygnus*)(wintering) • Bar-tailed godwit (*Limosa lapponica*) (wintering)	Indirect hydrological connection via the Castle River and River Roe.

Table 6.2: Designated Sites of National Importance (Areas of Special Scientific Interest - ASSIs and National Nature Reserves - NNRs) within 15 km of the Site

Site name	Distance	Reasons for designation	Potential pathways for effects
Coolnasillagh ASSI	2.7 km south-east	Purple moor-grass and rush pastures	None
Ballyrisk More ASSI	3.1 km north	Purple moor-grass and rush pastures	None
Castle River Valley NNR	3.4 km south	Purple moor-grass and rush pastures, lowland meadow	None
Gortcorbies ASSI	3.7 km north	Purple moor-grass and rush pastures	None
Smulgedon ASSI	3.9 km south	Purple moor-grass and rush pastures	None
River Roe and Tributaries ASSI	4.2 km north	River, oak woodland, otter, salmon	Indirect hydrological connection via the Castle River.
Brockagh Quarry ASSI	4.5 km south-east	Scarce blue-tailed damselfly	None
Ballymacallion ASSI	6 km south	Purple moor-grass and rush pastures, lowland meadow	None
Aghanloo Wood ASSI	6.7 km north-west	Mixed ash woodlands, wet woodlands	None
Errigal Glen ASSI	7.1 km south-east	Oak woodland	None
Bovevagh ASSI	8,3 km south-west	Geology: glacial deposits	None
Tircreven ASSI	9 km north	Geology: Jurassic rocks in a river valley	None
Altikeeragh ASSI, NNR	9 km north	Blanket bog	None
Binevenagh ASSI, NNR	9.2 km north	Inland rock, calcareous grassland, tertiary geology	None
Roe Estuary NNR	10.4 km north-west	Estuarine / coastal habitats and overwintering bird species	Indirect hydrological connection via the Castle River and River Roe.
Lough Foyle ASSI	11.2 km north-west	Saline lagoons, coastal saltmarsh, multiple overwintering bird species	Indirect hydrological connection via the Castle River and River Roe.

Site name	Distance	Reasons for designation	Potential pathways for effects
Altmover Glen ASSI	11.7 km south-west	Oak woodland	None
Loughermore Mountain ASSI	13 km west	Geology: exposures of Precambrian rock	None

18. Potential significant effects on water quality in the River Roe and its tributaries will be addressed in the Hydrology, Hydrogeology, Geology, Soils and Peat ES Chapter. Potential significant effects on the associated designated sites (**Tables 6.1** and **6.2**) will then be addressed in the Ecology and Ornithology ES Chapters. Potential effects on the designations as a whole will then be considered in accordance with Article 6 of the Habitats Directive.[34]

6.3.3 Survey Results to Date

6.3.3.1 Habitats and Flora

19. A map of habitats within the Site Boundary is provided in **Figure 6.3** of Appendix B. A number of Northern Ireland Priority Habitats were identified within the Site, including blanket bog, upland heathland, rivers / streams, and upland flushes, fens and swamps. Particular attention has been paid to habitats that would qualify as 'active peat', as defined in the NIEA advice note[35]. There is an area of deep peat on the crest of the hill, but the majority has been significantly modified by drainage and peat extraction, so at present it has been classified as a mixture of ‘active peat’ and ‘possibly active peat’, pending further surveys. All other areas within the Site on sloping ground have a shallow or negligible peat layer. Further fine-scale active peat assessments will be undertaken in any areas that are proposed for development.

20. No protected or priority flora have been recorded in the Site to date.

6.3.3.2 Protected / Priority Fauna

21. A number of terrestrial mammals have been recorded within a 5 km buffer of the Site, including badger, otter, pine marten, red squirrel, Irish hare and deer. With the exception of Irish hare, which have been directly observed on the access roads of the Operational Rigged Hill windfarm, no other mammals have been observed during surveys. Similarly, no field signs of badger or any other mammals have been observed to date. The access route to Site remains to be confirmed although, once finalised, surveys will be undertaken in any land utilised outside the red line boundary where there is the potential for protected species to be significantly affected. Woodland species such as red squirrels have been recorded in the adjacent Cam Forest, but are unlikely to use the Site on a regular basis due to the lack of tree cover.

6.3.3.3 Bats

22. 14 nights of bat surveys and one transect survey were carried out in May 2017 at six locations around the Site. Negligible bat activity was recorded on ten of the nights, primarily due to high wind speeds. On the other four nights there were low levels of activity, although Leisler's bats had Bat Activity Indices (BAIs) of approximately 3 - 4 bat passes per hour at a number of locations. This is equivalent to approximately one bat pass every 15 - 20 minutes on average, which is considered to be a relatively low level of activity. The species breakdown over six locations and 14 survey nights (a total 84 survey nights) was as follows:

- 465 Leisler's bats (72% of all records);
- 127 common pipistrelles (20%);
- 20 soprano pipistrelles (3%);
- 2 brown long-eared bats (<1%); and
- 29 unidentified bats (4%).

23. Surveys will continue for the remainder of the season at the current scope, but the survey period may be extended if higher levels of bat activity are recorded.

[34] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as amended OJ L 43, 1.1.2007, p. 1
[35] NIEA (2012). Advice Note on Active Peatland and PPS18. Available online at: https://www.daera-ni.gov.uk/sites/default/files/publications/doe/natural-guidance-active-peatland-and-pps18-2012.pdf [Accessed on 11/07/2017]

6.3.3.4 Reptiles and Amphibians

24. Some common frogs were recorded in the heathland and grassland habitats, but no common lizards or smooth newts have been recorded within the Site. No ponds or other permanent waterbodies were observed that could provide breeding habitat for newts or frogs. On this basis, it is proposed that newt surveys are scoped out of the EcIA.

25. Upland heathland is known to be a preferred habitat for common lizards, and it is possible that some may be present in the Site at low densities. However, considering that the surveyor has visited the Site on ten occasions between March and June (this encompasses a key period of lizard activity), and has covered more than 50 km of walked surveys to date, it is notable that no common lizards had been recorded. On this basis, it is expected that, if present, lizards may occupy the Site at very low densities, and therefore would not be likely to suffer significant effects during the decommissioning of the Operational Rigged Hill Windfarm nor during the construction of the Development. Consequently, it is proposed that lizard surveys are scoped out of the EcIA.

6.3.3.5 Terrestrial Invertebrates

26. A search for the larval habitat of the marsh fritillary butterfly was undertaken during the habitat surveys. A small patch of devil's-bit scabious (*Succisa pratensis)* was found on a patch of cutaway blanket bog in the north of the Site, but the surrounding vegetation is dominated by rank purple moor-grass and hummocks of *Polytrichum commune* moss, and therefore the habitat is considered to be sub-optimal for marsh fritillary. Consequently, it is proposed that marsh fritillary surveys are scoped out of the EcIA.

6.4 Key Sensitivities

27. Based on the surveys undertaken to date, the key ecological sensitivities are considered to be direct effects on peatland habitats and bats, and indirect effects on designated sites, watercourses and fisheries,.

6.4.1 Designated Sites

28. The risk of negative effects on designated sites is considered to be low. However, potential indirect effects on water quality in the River Roe and associated watercourses will be addressed in ES Chapter 11: Hydrology, Hydrogeology, Geology, Soils and Peat. Potential effects on all downstream designated sites and fisheries will then be addressed in the Ecology ES Chapter, and in the associated Habitats Regulations Assessment.

6.4.2 Peatland Habitats

29. A patch of highly-modified deep peat has been found in the flat watershed mire in the east of the Site, although other localised areas also contain patches of blanket bog habitat. There are also some areas of upland heathland and small-scale upland flush habitats, both of which are Northern Ireland Priority Habitats. In recognition of Policy RE1 of the Department of the Environment's 'Planning Policy Statement 18: Renewable Energy' regarding 'active peat' habitats, and to priority habitats under Policy NH5 of 'Planning Policy Statement 2: Natural Heritage', the Development will be designed to ensure that negative effects on these habitats are avoided or minimised.

30. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development will take place in one phase, and potential effects on habitats will be considered in combination. Where possible, existing roads and hardstanding platforms will be re-used, although it is likely that these features will be required to be re-engineered in order to accommodate larger turbines. These works to the existing infrastructure may result in effects on adjacent habitats, potentially including some small areas of active peat, although attempts will be made to avoid or minimise such effects. If any development is required in areas of active peatland, fine-scale active peat assessments (e.g. at 5 or 10 m intervals) will be carried out in order to avoid the areas of highest sensitivity. Consideration will also be given to the micro-siting allowance for each turbine, and of the areas that may be unsuitable for development within the allowed radius.

31. In order to compensate for any loss of active peat and priority habitats, a range of potential habitat mitigation and compensation measures are being considered, which may include the restoration of degraded peatland habitats (primarily by drain blocking), modification of the grazing regime, or the cessation of some damaging activities. These measures will be included in an outline Habitat Management Plan for the Development (which will be provided as a technical appendix to the Ecology ES Chapter), and will ensure that there is no net loss of biodiversity.

6.4.3 Bats

32. Based on the results of the spring bat surveys (see **Section 6.3.3.3**), it appears that high wind speeds are likely to reduce the suitability of the Site for foraging / commuting bats for most of the year, although some bats do use the Site when wind

speeds are low. Leisler's bat was the most-frequently recorded species, and had bat activity indices of 3 - 4 at multiple locations on four of the 14 survey nights (equivalent to one bat pass every 15 - 20 minutes on those nights). Bat surveys will proceed for the remainder of the summer and autumn periods, using a higher than recommended survey effort in order to ensure that the impact assessment is based on a robust dataset. Activity will be assessed in the context of onsite weather conditions, and will include activity data recorded at height.

6.5 Fisheries

33. The Development is located in the headwaters of the Castle River, a tributary of the River Roe. The River Roe is a key salmon and trout river and has been designated as a Special Area of Conservation (SAC) for Atlantic salmon. The Castle River is not included in the SAC, as it carries a low stock of salmon which are restricted to lower reaches of the sub-catchment although it does support a significant stock of brown trout. Recent Condition Assessments for the River Roe and Tributaries SAC have classified the salmon stock as of Favourable status (2007 & 2011). In terms of salmon spawning stock the Roe has significantly exceeded its conservation limit each year since 2007.

34. Under the Water Framework Directive (WFD), the Castle River catchment was divided into two waterbodies during the first cycle of River Basin Management Plans (RBMP) (2009-14) – the upstream waterbody (2045) was consistently classified as of Moderate Ecological Status in each year, while the downstream waterbody (2044) ranged from Poor to Good Ecological Status during this period. From 2015, the two waterbodies have been combined into a single unit (4061) which was assessed as of Good Ecological Status in 2015[36]. In each case classifications of less than Good status have been due to sub-standard benthic inverts and/or fish classification.

6.5.1 Stream Quality & Fisheries Potential

35. An outline assessment of the area and streams draining the Development was undertaken in June 2017. The Site is drained by six small tributary streams of the Castle River which flow in a westerly direction off the site. The streams within the Site Boundary are very small in size and are on steep slopes, so it is highly unlikely that they would support significant populations of fish or other aquatic fauna, As such, there would be no direct impact on fisheries or aquatic fauna within the Site and therefore it is proposed that these are scoped out of the EcIA.

36. The three streams draining the southern half of the site merge to form a single stream complex within 2 km of the site boundary. The most southerly stream flowing close to Temain Road is the most superior of the six tributary streams draining the Site and is likely to be populated with trout along the southern edge of the site to within 1 km of the wind farm infrastructure. The three northern streams are much smaller and unlikely to be populated with fish within the Site Boundary or in the immediate downstream reaches i.e. within 500 m of boundary. These three streams merge within 1.7 km of the Site Boundary to form a second stream complex which improves in quality and is of good fisheries potential and almost certain to contain trout in the area of Ballyavelin Road 2.5 km from the Site Boundary.

37. As part of the Development design approach, it is proposed to re-use the existing infrastructure where possible, this includes reusing or upgrading the existing watercourse crossings serving to Operational Rigged Hill Windfarm as well as maintaining a 50 m buffer of all natural watercourses and a 20 m buffer of large natural drains within the Site. Best practice techniques will be used during the decommissioning and construction phases of the Development to minimise any run off entering the watercourses. This is discussed further in **Section 11: Hydrology, Hydrogeology, Geology, Soils and Peat.**

38. Despite the small nature of the watercourses within the Site Boundary and the reuse of existing watercourse crossings wherever possible together with the use of best practice decommissioning / construction techniques, the presence of the designated River Roe and Tributaries along with the good fisheries potential within 1 km of the Development Site Boundary gives rise to possible indirect effects. As such, consideration needs to be given as to whether these possible indirect effects are likely to give rise to significant effects under the terms of the EIA Regulations. At this time, there is not sufficient information to determine with certainty that no significant indirect effects to the fisheries would arise from the proposed repowering of the Operational Rigged Hill Windfarm. Therefore, it is proposed to scope in indirect effects on fisheries within the EcIA, with further, more-detailed assessments being undertaken as set out below.

[36] NIEA River Basin View. Available online at: http://appsd.daera-ni.gov.uk/RiverBasinViewer/

6.5.1.1 Stream Habitat

39. In-stream habitat characteristics will be measured at selected reference sites, also utilised for water quality and fish stock assessment. Features measured will include:

- Stream width and depth;
- Flow velocity;
- Substrate composition (visually estimated as per Bain *et al*., 1985);
- Percentage deposited fine sediment (<2mm grain) on riverbed according to Clapcott *et al.,* (2011)[37]; and
- Characterisation of Salmonid Habitat.

40. The quality and quantity of salmonid habitat will be assessed using the Life Cycle Unit method (Kennedy, 1984)[38] to map the streams as spawning, nursery and holding water and assigning quality scores to each type of habitat. This procedure will be applied to key watercourses outside of the Site Boundary.

6.5.1.2 Fish Stocks

41. Electrofishing surveys will be carried out on the streams draining the Site to acquire data on fish distribution and abundance within and downstream of the Site. The survey will be based on a semi-quantitative methodology described by Crozier & Kennedy (1994)[39] and adopted locally by both DAERA and the Loughs Agency in juvenile fish stock assessments. All fish are collected using a dip net and retained for identification and measurement, and then returned to the water live.

6.6 Scoped In Effects

42. It is proposed that the following elements are scoped in to the EcIA:

- Possible direct effects on active peat and Northern Ireland Priority Habitats during construction works;
- Possible direct effects on foraging / commuting bats during the operation of the Development;
- Possible direct effects on terrestrial mammals within the Site access routes (yet to be confirmed);and
- Possible indirect effects on fisheries and other aquatic fauna in the River Roe catchment, and on the River Roe and Tributaries SAC.

6.7 Scoped Out Effects

43. It is proposed that the following elements are scoped out of the EcIA:

- Any designated sites other than those discussed above;
- Upland acid grassland and improved grassland habitats;
- Any rare or protected flora;
- Badgers and other terrestrial mammals within the Site;
- Common lizards and smooth newts; and
- Marsh fritillary butterflies or any other protected / priority invertebrates;
- Direct effects on fisheries and other aquatic fauna.

6.8 Key Questions for Consultees

44. Key questions for Consultees are:

- Although negative effects on active peatland habitat will be avoided where possible through design, there may need to be some small-scale effects on active peat habitats around the margins of existing infrastructure, which will be compensated by habitat management elsewhere in Site. Do the consultees agree with this approach?
- Are consultees content with the decision to scope out effects on lizards, newts, marsh fritillary and other protected / priority fauna?

[37] Clapcott, J. *et al.*, (2011). Sediment Assessment Methods: Protocols and guidelines for assessing the effects of deposited fine sediment on in-stream values.

[38] Kennedy, G.J.A (1984). Evaluation of techniques for classifying habitats for juvenile salmon (*Salmo salar* L.) *Proceedings of the Atlantic Salmon Trust Workshop on Stock Enhancement.*
[39] Crozier, W.W. & Kennedy, G.J.A. (1994). Application of Semi-Quantitative Electrofishing to juvenile salmonid stock surveys. *Journal of Fish Biology,* **45** (1): 159 – 164.

- Are there any other protected / priority flora or fauna that should be considered in the EcIA?
- Do the consultees have any particular concerns about potential effects on watercourses or fisheries?

7 Ornithology

7.1 Introduction

1. This section sets out the approach to the evaluation of the ornithological interest of the Site and surrounding area, and to the assessment of potential effects on birds.

2. The Ornithology assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case scenario than the decommissioning of the repowered wind turbines alone, should it be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

7.2 Suggested Methodology

4. The knowledge of the spatial and temporal occurrence of bird species within and surrounding the Site (see **Figure 7.1** of Appendix B) is essential to inform the likely effects of a development. The key objective of the ornithology surveys works were to (i) provide baseline data on all extant ornithological features to establish the risk posed to birds due to the Development; (ii) to quantify the risk of collision with turbines to extant bird species flying through the Site throughout the year; and (iii) to identify locations of priority target species territories to establish risk posed due to the Development.

5. The survey programme and assessment methods have been designed and reviewed throughout following best practice information including:

- NIEA (2010). Wind Energy Development in Northern Ireland's Landscapes: Supplementary Planning Guidance to accompany Planning Policy Statement 18 'Renewable Energy'. NIEA Research and Development Series No 10/01, Belfast;
- DOE (2015). DOE Planning & Environment: Standing advice for planning officers and applicants seeking planning Permission for land which may impact on wild birds;
- Ruddock & Reid (2010). Review of windfarms and their impact on biodiversity: Guidance for developments in Northern Ireland. Report by the Natural Heritage Research Partnership, Quercus for the Northern Ireland Environment Agency, Northern Ireland, UK;
- Tosh *et al*., (2014). A review of the impacts of wind energy developments on biodiversity. Report prepared by the Natural Heritage Research Partnership (NHRP) between Quercus, Queen's University Belfast and the Northern Ireland Environment Agency (NIEA) for the Research and Development Series No. 14/02;
- SNH (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoiding action, Scottish Natural Heritage;
- SNH (2005). Survey methods for use in assessing the impacts of onshore windfarm on bird communities. Scottish Natural Heritage;
- SNH (2006). Assessing significance of impacts from onshore windfarms on birds' outwith designated areas. July 2006. Scottish Natural Heritage;
- SNH (2009). Guidance on methods for monitoring bird populations at onshore wind farms. Guidance Note, January 2009. Scottish Natural Heritage;
- SNH (2010a). Survey methods for use in assessing the impacts of onshore windfarms on bird communities. November 2005 (revised December 2010), Scottish Natural Heritage;
- SNH (2010b). Use of avoidance rates in the SNH wind farm collision risk model. Scottish Natural Heritage;
- SNH (2011). Guidance on assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage;
- SNH (2012a). Assessing the cumulative impact of onshore wind energy developments. Scottish Natural Heritage;
- SNH (2012b). Instruction Notice No. 099 - Dealing with development management casework where these is less raptor activity than expected. Scottish Natural Heritage;
- SNH (2013a). Recommended bird survey methods to inform impact assessment of onshore windfarms. Scottish Natural Heritage;

- SNH (2013b). Assessing connectivity with Special Protection Areas (SPAs). July 2013. Scottish Natural Heritage;
- SNH (2014a). Assessing the impact of small-scale wind energy proposals on the natural heritage. Version 2 June 2014. Scottish Natural Heritage;
- SNH (2014b). Flight speeds and biometrics for collision risk modelling. October 2014. Scottish Natural Heritage;
- SNH (2014c). Recommended bird survey methods to inform impact assessment of onshore wind farms. May 2014. Scottish Natural Heritage;
- SNH (2014d). Guidance on repowering wind farms: bird survey requirements. November 2014. Scottish Natural Heritage;
- SNH (2015a). Good practice during wind farm construction. Scottish Natural Heritage. Version 3; and
- SNH (2015b). Spatial planning for onshore wind turbines – natural heritage considerations. Scottish Natural Heritage.

7.2.1 Field surveys

6. The survey scope of works has been designed utilising best practice guidance. A scoping meeting was held with Northern Ireland Environment Agency (NIEA) ornithologist, Dr Neil McCulloch to agree the proposed survey scope and methods in March 2014 and subsequently in April 2015 to review the survey findings and future scope of survey works. Further consultation with Dr McCulloch was undertaken in March 2016 to again review survey scope.

7. Surveys were undertaken within the Site Boundary and prescribed buffers of 500 m, 800 m and 2 km were surveyed (see **Figure 7.1** of Appendix B) and targeted at specific species (see **Table 7.1**). It is recognised that the final layout and Development footprint will be smaller than the maximum Site survey area defined in 2014 and that data and assessment will be adapted accordingly once the final layout and smaller footprint of the Development is defined.

8. The Site Boundary was digitally mapped in ArcGIS and defined as the maximum developable area. This was then buffered by 500 m to define the survey area ('500 m Survey Area') for breeding and wintering bird surveys, vantage point surveys and walkover surveys (see **Figure 7.1** of Appendix B). An 800 m buffer defined the search area for curlew during breeding season surveys ('800 m Survey Area'). The priority species survey area was defined as a 2 km buffer ('2 km Survey Area') to search for priority species breeding locations and/or territories or wintering locations (see **Figure 7.1** of Appendix B).

9. There was a suite of methods, compliant with best practice guidance, adopted to assess ornithology including the following field surveys which have been undertaken between 2014 and 2017:

- Breeding vantage point observation (March 2014 – August 2014);
- Wintering vantage point observation (September 2014 – February 2015);
- Spring migration vantage point observation (January 2014 – April 2014);
- Autumn migration vantage point observation (September 2014 – November 2014);
- Breeding walkover surveys (Brown & Shepherd[40] + passerines) (March 2014 – August 2014); including
  - Prey species surveys (April 2014 - July 2014); and
  - Woodland point counts (April 2014 – July 2014).
- Wintering walkover surveys (September 2014 – February 2015);
- Breeding priority species surveys (March 2014 – August 2014); including
  - Snipe surveys (May 2014); and
  - Red grouse surveys (April 2014; August 2014).
- Wintering priority species surveys (September 2014 – February 2015); and
- Supplementary breeding / wintering priority species surveys (March 2015 – August 2015; March 2016 – April 2017).

10. The surveys were undertaken by experienced field ornithologists, under licence from NIEA (where necessary).

11. Full details of the survey methods, survey effort, and weather conditions will be presented in the ES.

[40] Brown, A.F. & Shepherd, K.B. (1993). A Method For Censusing Upland Breeding Waders. *Bird Study* 40: 189-195.

7.2.1.1 Breeding & Wintering Vantage Point Surveys

12. Breeding and wintering vantage point surveys were undertaken from four vantage point locations (see **Figure 7.1** of Appendix B). These vantage point locations were selected to provide comprehensive spatial coverage (viewsheds) of the 500 m Survey Area.

13. The area visible from each vantage point was calculated in GIS and ground-truthed (i.e. confirmed during field surveys) to establish the physical visibility of the viewshed including landscape features (e.g. woodland, spoil heaps etc.) that are not accounted for in the computer modelling programme. The vantage points effectively covered the 500 m Survey Area to ground level, when truncated at 2 km and all airspace out to 2 km and beyond was visible.

14. Focal observations from vantage points over-looking the 500 m Survey Area were utilised to assess target species activity, flight height and flight routes in a hierarchical fashion (see **Table 7.1**). Where primary target species were recorded inside the 500 m Survey Area, the detection time, flight trajectory, flight duration (to the nearest second) and flying height above ground level (a.g.l.) was recorded visually at detection and at 15 second intervals thereafter. Other secondary target species (see **Table 7.1**) had flight routes mapped and flying height recorded at detection and the altitudinal range in which it occurred throughout the bout.

15. Ornithologists scanned a 180° arc both visually and with binoculars. A range of diurnal and crepuscular times and weather conditions were sampled. Methods followed those recommended by SNH (2005; 2013; 2014) and Band *et al*., (2007) in order to provide data to inform collision risk modelling requirements, if necessary.

16. Vantage point surveys were carried out over the breeding period (March 2014 to August 2014) and wintering period (September 2014 to February 2015) in order to collect information on flying heights, distribution and occurrence of target species and assess the risk posed by the Development from collision.

17. A total of 36 hours from each vantage point was undertaken during the breeding season 2014 and a further 36 hours during the wintering season 2014 – 2015. That is, a total of 72 hours has been completed from each vantage point location. Collectively 288 hours vantage point hours have been completed.

7.2.1.2 Migration Vantage Point Surveys

18. Bird migration occurs in two distinct seasonal periods i.e. autumn migration arbitrarily defined from September to November and spring migration arbitrarily defined from late January to late March/early April in Northern Ireland. Additional vantage point locations (see **Figure 7.1** of Appendix B) were selected to undertake migration season observations in order to assess occurrence of any movement corridors or migration routes particularly for waders, geese and swans and other key target species (see **Table 7.1**).

19. These focal observations of target species were carried out from a single vantage point located to assess the spatial distribution and occurrence of migrating birds over-flying the 500 m Survey Area. The autumn migration vantage point (AMVP) and spring migration vantage point (SMVP) were selected on ground to maximise visibility and covered a viewing arc of 180° facing north (in autumn) and south (in spring) of the survey area to maximise the detection of arriving or departing birds and/or localised movements of over-flying migrants. Observers were particularly vigilant to the occurrence of any SPA citation species for the Lough Foyle SPA / RAMSAR site (see **Table 7.1**)

20. Methods of recording and detection were the same as for breeding / wintering vantage point surveys and again a range of times and weather conditions were sampled although surveys were not conducted during periods of very high winds or persistent heavy rain. However, when encountered, intermittent periods of poor visibility (i.e. fog) were surveyed using auditory techniques. A range of crepuscular and daytime hours were sampled each month which covered the dawn and dusk periods in order to assess movements to / from roosting / foraging areas.

21. A total of 36 hours from each vantage point was undertaken during the spring migration season of 2014 (January 2014 – April 2014) and a further 36 hours during the autumn migration season in 2014 (September 2014 – November 2014). That is, a total of 72 hours has been collectively completed for migration season(s).

7.2.1.3 Breeding walkover surveys

22. Breeding bird territories were surveyed using a modified Brown & Shepherd (1993) transect methodology to incorporate passerines. Surveys were to provide breeding estimates and distribution for all bird species within the 500 m Survey Area

and for breeding curlew within the 800 m Survey Area. These surveys also included an assessment of the abundance and distribution of meadow pipits and skylarks, considered to be important prey species for hen harriers and merlin. Point counts were undertaken at any areas of impenetrable woodland or where access was constrained.

23. The location and activity of birds were recorded using standard (BTO) codes at the point of detection. Summary maps were compiled showing the location of each identified territory or breeding pair. Population estimates were derived by comparing the summary maps for each survey and identifying distinct territories by assessing breeding behaviours and spatial locations to establish breeding status as either confirmed, probable, possible or non-breeding. The conservation status of each bird species is defined based on Eaton *et al*., (2015)[46] and Colhoun & Cummins (2013)[45].

24. A minimum of 24 to 36 hours of survey were completed each month between March 2014 and August 2014 covering all parts of the Site and the area falling within the 500 m and 800 m Survey Areas.

7.2.1.4 Wintering walkover surveys

25. Winter bird surveys were carried out using transects covering the 500 m Survey Area during the winter period (September 2014 to February 2015). Surveys covered the ground systematically over the winter season with transects and constant search effort.

26. A minimum of six to nine hours survey was carried out each month over the wintering season September 2014 to February 2015 with all species recorded using standard BTO codes and mapped at the point at which they were detected along with any associated behaviour codes. The conservation status of each bird species is defined based on Eaton *et al*., (2015) and Colhoun & Cummins (2013).

7.2.1.5 Breeding priority species surveys

27. Priority species searches were carried out between March and August to establish if suitable habitat(s) contained breeding target species to identify risk species for turbine collision or displacement. These searches include specific assessments of the suitable habitat(s) to identify nesting distribution and breeding status for species of high conservation concern (see **Table 7.1**) notably Annex I (EU Birds Directive), Schedule 1 (Wildlife (Northern Ireland) Order 1985) and Birds of Conservation Concern (Colhoun & Cummins, 2013; Eaton *et al.,* 2009; 2015) within the 2 km Survey Area.

28. A minimum of nine to 15 hours survey were carried out each month over the breeding season March 2014 to August 2014 with all species recorded using standard BTO codes and mapped at the point at which they were detected along with any associated behaviour codes and nest locations identified.

29. **Raptor surveys** - surveys for breeding raptors specifically followed prescribed methods (Hardey *et al*., 2013[41]) between March 2014 and August 2014.

30. **Red grouse surveys** - additional breeding season surveys were carried out for red grouse in April 2014 and August 2014. This method comprises dusk and dawn counts for calling grouse within suitable habitat to establish the abundance and distribution within the 500 m Survey Area in April. In August, a walkover survey was conducted with a trained dog to identify the locations of red grouse coveys, if any, within the 500 m Survey Area.

31. **Wader surveys** - curlew, golden plover, lapwing and snipe were also specifically targeted during additional searches between March 2014 and August 2014 and additional walkover surveys were conducted where required. These also include "dusk" surveys during May to look and listen for displaying ('drumming' and 'chipping') snipe within the 500 m Survey Area and also locations which were recorded from vantage points. Curlew were surveyed across the 2 km Survey Area using vantage point and walkover surveys of suitable habitat and all sightings of curlew were followed up to establish breeding activity.

[41] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

32. To establish the final location of all priority breeding species including curlew, lapwing and snipe territories; cumulative analyses were undertaken which integrates observations from the vantage points, breeding bird surveys and priority species searches to identify distinct territories.

7.2.1.6 Wintering priority species surveys

33. During the winter, between September 2014 and March 2015, surveys were carried out to identify any target species (see **Table 7.1**) and particularly surveyed for hen harrier winter roosts and whooper swan and/or goose roosting and foraging areas and/or commuting routes. Surveys for wintering hen harrier roosts were carried out at suitable habitat (Hardey *et al*., 2009) at dawn and/or dusk.

34. Whooper swan and goose surveys were carried out within all parts within the 2 km Survey Area during each survey visit as well as wider (5-10 km) searches were carried out to identify the nearest whooper swan wintering areas and surveys of published whooper swan wintering areas (Robinson *et al*., 2004[42]). Swan / goose roosts identified were also observed at dawn / dusk to establish numbers occurring and the direction of arrival / departure to / from roosts. Observers were particularly vigilant to the occurrence of any SPA citation species for the Lough Foyle SPA / RAMSAR site (see **Table 7.1**).

35. A minimum of six to nine hours survey was carried out each month over the wintering season September 2014 to February 2015 with all species recorded using standard BTO codes and mapped at the point at which they were detected along with any associated behaviour codes, flight routes and flock size.

7.2.1.7 Supplementary breeding / wintering priority species surveys

36. NIEA initially confirmed in April 2015 that no additional supplementary surveys would be necessary (N. McCulloch, personal communication) following the comprehensive suite of surveys carried out in 2014 – 2015. Nonetheless, the Applicant commissioned additional surveys which were undertaken throughout the breeding season of 2015 (March 2015 to August 2015). Following further consultation confirmed with NIEA on 22nd March 2016 additional supplementary surveys were undertaken in 2016 - 2017 (March 2016 – April 2017) to maintain understanding and knowledge of priority species breeding and wintering locations and to monitor changes, if any, as agreed with NIEA.

37. A minimum of six to 30 hours were completed in each of these months including surveys of raptors, waders (snipe, curlew), red grouse and wintering swans / geese and raptors. Surveys followed the same methods as previously described for each of these species or species assemblage.

7.2.2 Assessment & Reporting

38. The assessment will follow the guidance set out in the EIA Regulations and will follow standardised guidance (CIEEM, 2016) to focus on potentially significant effects. The aim of the assessment is to inform consultees and the planning authority that sufficient information and robust assessment is available to establish whether the Development, either alone or in combination with other plans or projects, will not have significant effects on ornithology.

39. Effects arising from the decommissioning, construction and operational phases, presents three main risks to birds:

- Direct loss of breeding, wintering and/or foraging habitat, due to the footprint of development;
- Direct mortality due to collision with the turbine blades, nacelles, towers and/or ancillary windfarm infrastructure (e.g. sub-station, battery housing, power-lines, meteorological masts); and
- Displacement of birds as a result of increased disturbance and/or decreased suitability of breeding, wintering and/or foraging habitats.

40. Disturbance can take varying formats and occur over short or long temporal periods. The effects may be transient (e.g. short-term alteration in behaviour) or permanent (e.g. total displacement from the breeding or wintering locations). Disturbance

[42] Robinson, JA, K Colhoun, JG McElwaine & EC Rees. (2004). *Whooper Swan* Cygnus cygnus *(Iceland population) in Britain and Ireland 1960/61 – 1999/2000*. Waterbird Review Series. The Wildfowl & Wetlands Trust/Joint Nature. Conservation Committee, Slimbridge.

effects may be lower depending on the tolerance and/or experience/habituation of individuals or species (Ruddock & Whitfield, 2007[43]; Whitfield *et al*., 2008[44]).

41. Effects are likely to occur in the following phases;

- During the decommissioning of the Operational Rigged Hill Windfarm;
- During the construction phase of repowered turbines and associated infrastructure; and
- During the operational phase of the Development.

42. The decommissioning / construction phases will occur over a short temporal period (approximately eight months) whilst the operational phase will occur over the operational life-time of the Development, in perpetuity. Cumulative effects can also occur temporally or spatially in combination with other nearby proposals.

43. In addition to the policy and guidance documents identified in **Section 7.2** of this Scoping Request, further consideration will also be given to the published scientific literature and also to the following during assessment:

- Environmental Impact Assessment Directive 85/337/EEC (as amended);
- EU Council Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive);
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of wild flora and fauna (the Habitats Directive);
- The Conservation (Natural Habitats, etc.) Regulations 1995 (as amended) which transposes the Habitats Directive into law in Northern Ireland (the Conservation Regulations);
- The Wildlife (Northern Ireland) Order 1985 (as amended) (the Wildlife Order);
- The Wildlife & Natural Environment (Northern Ireland) Act 2011;
- Planning Policy Statement 2 (PPS 2) Planning & Nature Conservation;
- Planning Policy Statement 18 (PPS 18);
- JNCC (2012) UK Biodiversity Action Plan;
- Local Biodiversity Action Plans (www.biodiversityni.com);
- Balmer *et al*., (2013). Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland. British Trust for Ornithology;
- Colhoun & Cummins (2013). Birds of conservation concern in Ireland 2014 – 2019;
- Eaton *et al.,* (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man; and
- CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition.

7.2.2.1 Identification and evaluation of effects

44. In the first instance, the Development will avoid significant effects by sensitive design of the windfarm layout and programme of works. Following the results from each survey and assessment of the baseline, the effects of the Development will be analysed in isolation and in combination (with cumulative developments) and considered based on:

- Type;
- Extent;
- Magnitude;
- Duration;
- Reversibility;
- Timing; and
- Frequency.

[43] Ruddock, M. & Whitfield, D.P. (2007). A review of disturbance distances in selected bird species. Report from Natural Research (Projects) Ltd to Scottish Natural Heritage. Natural Research, Banchory, UK.
[44] Whitfield, D.P., Ruddock, M. & Bullman, R. (2008). Expert opinion as a tool for quantifying bird tolerance to human disturbance. *Biological Conservation* 141: 2708-2717.

45. Effects will be reported according to EIA Regulations as either significant or not significant in the context of the conservation status (Colhoun & Cummins, 2013[45]; Eaton *et al*., 2015[46]) and population status and trends of each potentially affected species. If necessary, upon assessment of the impact of the Development, this process considers the necessary mitigation and / or enhancement measures together with any residual impacts, as well as cumulative effects.

7.3 Baseline

7.3.1 Designated Sites

46. The Site is not located within any nationally or internationally designated sites for ornithological features. The Operational Rigged Hill windfarm is located approximately 10 km to the north-west of the Lough Foyle SPA, designated in 1999 for whooper swan, light-bellied brent geese and bar-tailed godwit and the wintering waterbird assemblage. This SPA was designated five years after the approval of the Operational Rigged Hill Windfarm in 1994. Lough Foyle is also designated as an ASSI and a RAMSAR site (see **Table 7.2).**

47. Within 5 km, the Coolnasillagh ASSI mentions curlew and snipe and the Ballyrisk More ASSI designated for species rich grassland mentions willow warbler and meadow pipit in the citation document. Gortcobies ASSI Castle River Valley ASSI, Smulgedon ASSI and Brockagh Quarry ASSI only generally mentions the suitability of the site for birds, but does not list any specific species. The River Roe & Tributaries SAC and ASSI is located approximately 4 km to the west and north-west but are not designated for ornithological interests. There are several other designated sites between 5 km and 10 km some of which cite ornithology features (see **Table 7.2**). Additionally baseline surveys and assessment will consider any flight path connectivity between designated sites.

7.3.2 Surveys Results to Date

48. An extensive suite of desktops reviews and surveys have been completed, and full results will be presented in the Environmental Statement; however the key findings are as follows:

- Desktop reviews are being undertaken of published distributional data from National Biodiversity Network (NBN), CeDaR, British Trust for Ornithology (BTO) and Northern Ireland Raptor Study Group (NIRSG);
- During the breeding season there were 14 target species recorded whilst 14 species were also recorded during the winter. Fewer target species were recorded during spring migration (seven species) and autumn migration (eight species);
- Most frequently detected species from all vantage point surveys were raven, buzzard, snipe, kestrel and lesser black-backed gull although the detection frequency varied by vantage point type and seasonally;
- The locations of the target one priority species were mapped by vantage point type. The majority of target one species (see **Table 7.1**) flights were at low level including hen harrier all of which were at <10 m to <25 m elevation above ground level (a.g.l.); greylag geese (>125 m) and whooper swans were only recorded at high elevation (>150 m), golden plover flights ranged between <10 m and <150 m although the majority of these were <25 m a.g.l. whilst merlin were all <10 m and peregrine ranged between <10 m to >150 m a.g.l.;
- There were 52 species recorded during breeding walkover surveys and a smaller number, 43 species recorded during winter walkover surveys;
- Priority species breeding location confirmed that hen harrier, buzzard, sparrowhawk, raven, red grouse, snipe, kestrel and merlin were all recorded within the 2 km Survey Area with two peregrine and two other breeding hen harrier locations identified beyond 2 km;
- Wintering species were recorded widely within the 2 km Survey Area (including gulls, buzzard, kestrel, snipe, red grouse, peregrine and raven) and there were no wintering swan or geese roosting or foraging areas recorded the 2 km Survey Area;
- A raven roost and wintering two hen harrier roost areas were identified within the 2 km Survey Area. The hen harrier maximum roost count was three birds (two males and a female) and was used regularly over the autumn and winter; and
- There were relatively small changes observed in supplementary priority species surveys, with species in similar locations and/or abundances between years.

[45] Colhoun, K. & Cummins, S. (2013). Birds of conservation concern in Ireland 2014 – 2019. Irish Birds 9: 523-544.

[46] Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. & Gregory, R., (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* 108: 708–746.

7.4 Key Sensitivities

49. The key sensitivity identified is the presence of breeding merlin in the 500 m Survey Area although all flights recorded were low elevation as well as two pairs of hen harrier in the wider area and winter roosting hen harriers just beyond the 500 m Survey Area.

50. Collision modelling will be required for peregrine falcon and possibly greylag geese (depending on blade tip heights) and displacement modelling required for snipe. Flight activity will require to be assessed during collision risk modelling once final turbine layout and turbine metrics are known.

51. A number of breeding snipe territories were recorded within the footprint of the Operational Rigged Hill Windfarm, and despite reported sensitivity of this species to windfarms (Pearce-Higgins *et al*., 2009[47]; 2012[48]) there were more snipe within the Operational Rigged Hill Windfarm than in the wider area. Consideration will be given to these findings in the context of habituation and displacement, and thus are considered to have lesser effects from the repowering scheme subject to sensitive design and mitigation measures (e.g. during the construction phase).

52. Since a small number of species which are listed on the Lough Foyle SPA citation namely whooper swan, greylag goose and golden plover have been recorded, the Development will be considered in the context of these species, and the potential effects of the repowering scheme assessed. Flight activity was, however, infrequent for these species during vantage point surveys but if necessary an appropriate assessment will be prepared in consideration of the SPA and associated site features, although currently this is not considered a likely requirement.

7.5 Scoped In Effects

53. The baseline data will be incorporated into the design and constraints process in the first instance to inform design and shape of final layout and minimise impacts of displacement or collision and an assessment will be undertaken once the scheme design is finalised. Collision risk modelling (CRM) required for peregrine falcon and possibly greylag geese – depending on blade tip heights), and displacement modelling required for snipe, as well as footprint analysis for smaller passerines. There will be due consideration of all species recorded flying through the 500 m Survey Area and any potential significant effects taking account of the final layout.

54. There were small numbers of whooper swan and greylag goose flights recorded during vantage point observation and these will be reviewed in context of the final turbine layout and turbine metrics, to establish collision risk, The whooper swan flights recorded were very high elevation and thus unlikely to be at risk of collision.

55. The surveys conducted here have provided an excellent baseline of data that is compliant with best practice guidance. Whilst the numbers or locations of species may vary marginally between years, the data is considered to provide robust baseline for minimising impacts during the design and constraints process and also for establishing potential for significant effects, if any, during the final assessment of the Development.

56. As outlined in **Section 7.2.2** above, baseline data will be assessed for all phases of the Development during decommissioning, construction and operation phases. Some effects may occur at none, one or all of these phases.

7.6 Scoped Out Effects

57. In the absence of a final layout it remains necessary to continue to consider all baseline data in the context of the final layout at this stage, for decommissioning, construction, and operational phases. Further consideration and assessment is required prior to determining if any ornithological effects can be scoped out of the assessment. It is however noted that there was strong evidence of habituation of some species within the Operational Rigged Hill Windfarm, in particular, numerous active

[47] Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. (2009). The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology* 46: 1323-1331

[48] Pearce-Higgins, J. W., Stephen, L., Douse, A. & Langston, R. H. W. (2012) Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 49: 386-394.

(and successful) snipe territories were recorded, indicating habituation to the operational turbines. One snipe nest was observed within 20 - 30 m of a turbine and recorded to have successfully fledged young.

58. Red grouse territories recorded within the Operational Rigged Hill Windfarm and at one territory a covey of five birds, including young grouse were recorded in the autumn counts, so grouse are breeding successfully within the Site. The baseline findings indicates habituation, and other species, may still be vulnerable to construction or decommissioning activities.

59. There were relatively few goose or swan flights recorded within the vantage point surveys over the Site, despite wider occurrence of these species in the Foyle Estuary. There appears to be no connectivity or movement corridor for these species near the Site and thus low weighting shall be given to effects on these species based on existing data.

60. Curlew were not recorded to occur in the wider survey despite historical occurrence within 2 km of the Site (M. Ruddock, personal observation). Presently known territories in this area are located beyond 2 km and therefore no significant effects are predicted.

61. Some (non-breeding) golden plover flights were recorded, which could be subject to collision risk. However published literature indicates that this species shows considerable avoidance and lack of effect due to windfarms (Fielding & Haworth, 2010[49]; Douglas *et al.,* 2011[50]). Thus significant effects may be considered to be of lower likelihood based on published literature, nevertheless they will be continue to be considered within the assessment phase at this stage, but no collision risk model is proposed to be undertaken for this species, as agreed with NIEA in April 2015.

7.7 Key Questions for Consultees

62. Key questions for Consultees are:

- Do consultees agree that the surveys completed are of sufficient scope to allow an effective assessment?
- Do consultees hold any specific additional information that should be incorporated either in to the design or assessment for the Development?
- Do consultees have any topics or details that they would require more information on within the assessment?

[49] Fielding, A.H., Haworth, P., (2010). Farr windfarm: A review of displacement disturbance on golden plover arising from operational turbines between 2005-2009. Unpublished report by Haworth Conservation Ltd.
[50] Douglas, D.J.T., Bellamy, P.E & Pearce- Higgins, J.W. (2011). Changes in the abundance and distribution of upland breeding birds at an operational wind farm. Bird Study 58: 37-43.

Table 7.1: Details of species surveyed during vantage point observations and priority species searches.

Species	Vantage Point (Target 1) *	Vantage Point (Target 2) **	Migration Vantage Point	Priority Species Surveys (2km)
Hen harrier	•		•	•
Peregrine falcon	•		•	•
Merlin	•		•	•
White-tailed eagle	•		•	•
Golden eagle	•		•	•
Goshawk	•		•	•
Osprey	•		•	•
Red kite	•		•	•
Marsh harrier	•		•	•
Golden plover	•		•	•
Whooper swan	•		•	•
Mute swan	•		•	•
Chough	•		•	•
Barn owl	•		•	•
Short-eared owl	•		•	•
Long-eared owl	•		•	•
Red grouse	•		•	(500 m)
Curlew	•		•	•
Geese (all species)	•		•	•
Buzzard	•	•	•	•
Kestrel	•	•	•	•
Sparrowhawk	•	•	•	•
Snipe	•	•	•	(500 m)
Lapwing	•	•	•	•
Raven	•	•	•	•
Grey heron		•	•	•
Cormorant		•	•	•
Corncrake		•	•	•
Waders (all species)	•	•	•	•
Ducks (all species)		•	•	•
Grebes (all species)		•	•	•
Gulls (all species)		•	•	•
Terns (all species)		•	•	•
SPA citation species (all)	•	•	•	•

* Target 1 species are recorded to the nearest minute, and assigned a five minute interval and the flight route is mapped. Flying height (at 15 second intervals) and flight duration to the nearest second are recorded

** Target 2 species are recorded to the nearest minute and assigned a five minute interval and have flight route mapped. Height is recorded at point of detection and an altitudinal range also recorded for the duration of the bout.

Table 7.2: Details of designated sites within 10 km of the Site Boundary

Reference	Name	County	Status	Distance from Site Boundary (km)	Primary Site Features	Secondary Site Features	Year
ASSI267	Coolnasillagh	Londonderry	ASSI	2.7	Species rich grassland	Curlew, snipe	2009
ASSI266	Ballyrisk More	Londonderry	ASSI	3.1	Species rich grassland	Willow warbler, meadow pipit	2007
ASSI371	Gortcorbies	Londonderry	ASSI	3.6	Species rich grassland, wet heath	Mentions 'birds' but no species	2011
ASSI258	Smulgedon	Londonderry	ASSI	3.6	Species rich grassland	Feeding and roosting sites for 'birds' but no species	2006
ASSI395	Brockagh Quarry	Londonderry	ASSI	4.5	Damselfly, botany	Mentions 'birds' but no species	2013
ASSI257	Ballymacallion	Londonderry	ASSI	6.0	Species rich grassland	Woodland, scrub	2007
ASSI228	Aghanloo Wood	Londonderry	ASSI	6.7	Woodland	Mentions 'birds' but no species	2004
ASSI256	Errigal Glen	Londonderry	ASSI	7.1	Woodland	Mentions 'breeding birds' but no species	2007
ASSI171	Altikeeragh	Londonderry	ASSI	8.9	Peatland	Snipe, red grouse, raven, kestrel,	1999
NNR9	Altikeeragh	Londonderry	NNR	8.9	Peatland	Snipe, red grouse, raven	2002
ASSI212	Binevenagh	Londonderry	ASSI	9.0	Geology, flora, fauna	Peregrine falcon, fulmar	2000
ASSI167	Carn/Glenshane Pass	Londonderry	ASSI	9.3	Peatland	Red grouse	2000
NNR4	Binevenagh	Londonderry	NNR	9.7	Geology, botany	Kittiwake, fulmar, buzzard, raven, peregrine falcon	-
UK9020031	Lough Foyle	Londonderry	SPA	10.2	Whooper swan, light-bellied brent geese, bar-tailed godwit	Waterbird assemblage (red throated diver, great crested grebe, mute swan, bewick's swan, greylag geese, shelduck, teal, mallard, wigeon, eider, red-breasted merganser, oystercatcher, golden plover, grey plover, lapwing, knot, dunlin, curlew, redshank, greenshank, slavonian	1999

Reference	Name	County	Status	Distance from Site Boundary (km)	Primary Site Features	Secondary Site Features	Year
						grebe)	
ASSI051	Lough Foyle	Londonderry	ASSI	10.2	Estuary	Whooper swan, light-bellied brent geese, bar-tailed godwit, red throated diver, great crested grebe, mute swan, bewick's swan, greylag geese, shelduck, teal, mallard, wigeon, eider, red-breasted merganser, oystercatcher, golden plover, grey plover, lapwing, knot, dunlin, curlew, redshank, greenshank, slavonian grebe	1998
UK12014	Lough Foyle RAMSAR site	Londonderry	RAMSAR	10.2	Wetland	Whooper swan, light-bellied brent geese, bar-tailed godwit, red throated diver, great crested grebe, mute swan, bewick's swan, greylag geese, shelduck, teal, mallard, wigeon, eider, red-breasted merganser, oystercatcher, golden plover, grey plover, lapwing, knot, dunlin, curlew, redshank, greenshank,	1999
NR24	Roe Estuary	Londonderry	NNR	10.3	Estuary	Wintering waders, ducks, swans and geese; curlew; lapwing	-

8 Noise

8.1 Introduction

1. This section of the Scoping Request sets out the proposed methodology and approach to be applied in the assessment of noise due to the Development.

2. The assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case scenario than the decommissioning of the Development alone, should it be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

4. This section of the Scoping Request presents the suggested methodology and scope of the noise assessment, detailing those elements proposed to be scoped in and scoped out of the EIA assessment process. As discussed in **Section 8.6**, no significant impacts are considered likely to arise as a result of decommissioning / construction activity, and the operation of the battery storage facility, leaving only noise arising from the operation of the proposed wind turbines as the only phase with the potential to give rise to a significant effect.

5. Sources of noise during operation of a wind turbine are both mechanical (from machinery housed within the turbine nacelle) and aerodynamic (from the movement of the blades through the air). Modern turbines are designed to minimise mechanical noise emissions from the nacelle through isolation of mechanical components and acoustic insulation of the nacelle. Aerodynamic noise is controlled through the design of the blade tips and edges. In most modern wind turbines, aerodynamic noise is also restricted by control systems which actively regulate the pitch of the blades.

6. Whilst noise from the wind turbines increases with wind speed, at the same time ambient background noise (for example wind in trees) usually increases at a greater rate. Planning conditions are used to enforce compliance with specified noise level limits.

7. The effects of noise from the Development will be assessed in consultation with the Environmental Health Officer of the Council, who has been provided with a document detailing the suggested assessment methodology.

8.2 Suggested Methodology

8. Current planning policy for renewable energy developments in Northern Ireland is contained in Planning Policy Statement 18: Renewable Energy [51] (PPS18), and the accompanying Best Practice Guidance[52] (BPG). The BPG refers to the use of ETSU-R-97[53] for the assessment of windfarm noise, although in January 2015, the Northern Ireland Assembly Environment Committee published a report on its inquiry into wind energy[54], which included a recommendation that the use of the ETSU-R-97 guidelines should be reviewed on an urgent basis and that more appropriate guidance should be put in place. To date, that guidance has not emerged, and the use of ETSU-R-97 remains valid.

[51] Department of the Environment Northern Ireland (2009), Planning Policy Statement 18 Renewable Energy. Available online at: https://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/planning_policy_statement_18__renewable_energy.pdf [Accessed on 11/07/2017]

[52] Department of the Environment Northern Ireland (2009), Best Practice Guidance to Planning Policy 18 'Renewable Energy'. Available online at: https://www.planningni.gov.uk/index/policy/planning_statements/planning_policy_statement_18__renewable_energy__best_practice_guidance.pdf [Accessed on 11/07/2017]

[53] ETSU for the DTI (1997), ETSU-R-97 The Assessment and Rating of noise from Windfarms.

[54] Northern Ireland Assembly Environment Committee (2015), Report on the committee's Inquiry into Wind Energy 29 January 2015 NIA 226/11-16 ISBN: 978-0-339-60553-4.

9. In March 2016, the Department of the Environment launched a call for evidence in relation to strategic planning policy for renewable energy development[55]. This evidence will inform a future revision to policy and guidance in relation to windfarm development in Northern Ireland.

10. The Institute of Acoustics' (IOA) Good Practice Guide to the application of ETSU-R-97[56] (GPG) is currently endorsed for use in Northern Ireland, with the exception of the Example Planning Condition provided in Appendix B of the GPG.

11. Based on the above, the assessment will therefore be conducted in accordance with ETSU-R-97 and the GPG, as these represent current guidance and best practice.

8.3 Baseline

12. Other than the Operational Rigged Hill Windfarm, and based upon previous experience, no other windfarms are considered to be in sufficient proximity to affect the measured background noise levels, however it is of note that a number of single turbine developments are situated in the locality, although the operational status of these turbines has yet to be confirmed. Should it be found that any operational turbines are situated such that they may affect the measured background noise levels, these will be taken into account in the background noise survey and subsequent analysis. Furthermore, Smulgedon Wind Farm, currently under construction 4 km south of the Development, has the potential to influence background noise levels in the event of it becoming operational prior to the baseline noise survey being conducted.

13. The GPG provides advice on how appropriate background noise measurements can be made in the presence of existing wind turbines by the following methods:

- Switching off the existing wind turbines during the background noise survey;
- Accounting for the contribution of the existing wind turbines in the measurement data by directional filtering or subtracting a prediction of noise from the existing windfarms;
- Utilising an agreed proxy location removed from the area acoustically affected by the existing wind turbines; or
- Utilising background noise data presented with the Environmental Statements / Reports for the existing wind turbines (the suitability of the background noise level data should be established).

14. Switching off cumulative wind developments is not likely to be possible as these are not within control of the Applicant. Identification of a proxy location with an acoustic environment representative of nearby receptors in the absence of wind turbine noise is unlikely to be practicable due to the site-specific nature of the background noise environment. Background noise data in previous assessments has been found to be unavailable, or not collected in accordance with the GPG and therefore unsuitable for use in the current assessment. It is therefore proposed to use either directional filtering or subtraction of predicted noise due to the existing wind turbines to exclude the effects of operational noise.

15. Due to the location of the cumulative wind turbines relative to the Development, directional filtering has the disadvantage that it would exclude measurements made under wind directions that are most relevant to the assessment, i.e. those from the location of the Development toward the receptors. This therefore leaves subtraction of predicted noise levels due to the existing turbines as the most suitable methodology. This approach is likely to be conservative, as windfarm noise prediction methods recommended in the GPG are designed to produce typical worst-case results.

16. The resulting baseline noise measurements will then be analysed in accordance with the ETSU-R-97 and the GPG, including corrections for the effects of operating wind turbines, to derive representative prevailing background noise curves relative to 10 m standardised wind speed for each monitoring location. The appropriate daytime fixed lower noise limit will be determined taking into account the three factors discussed in ETSU-R-97 and the GPG (the number of affected properties, the effects on the amount of energy generated and the magnitude and duration of exposure), and appropriate noise limits defined.

[55] Department of the Environment (2016), call for Evidence: Strategic planning policy for Renewable Energy Development.

[56] Institute of Acoustics (2013), A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.

8.4 Key Sensitivities

17. The assessment is limited to the effects on human receptors at noise-sensitive locations as defined in PPS18[51], namely residential properties, schools, hospitals and places of worship. Each of these receptor types are considered to be of equal value.

18. At present, the design of the Development is not sufficiently advanced to allow for preparation of a noise contour plot to assist in the identification of baseline noise monitoring locations and the key sensitive receptors. These locations will be confirmed through modelling prior to installing the background noise monitoring equipment, and further consultation carried out with The Council to agree on their selection.

8.5 Scoped in Effects

8.5.1 Cumulative Assessment

19. ETSU-R-97 and the GPG state that the noise limits apply to the cumulative effect of noise from all wind turbines that may affect a particular location. Therefore a search will be undertaken to identify any developments either operational, consented or in planning which may require consideration in the assessment process. A screening exercise will then be carried out to identify which of these require inclusion in the cumulative assessment, based on consideration of the '10 decibel difference' rule described in the GPG. It should be noted that the wind turbines comprising the operational Rigged Hill Wind Farm will be removed and therefore do not require consideration in the cumulative assessment.

20. A cumulative assessment will then be undertaken for each development identified by the initial screening exercise, taking account of any relevant planning conditions, installed turbine type, available headroom, controlling properties and the effects of wind direction as described in the GPG.

8.6 Scoped Out Effects

8.6.1 Low-Frequency Noise

21. A study[57], published in 2006 by acoustic consultants Hayes McKenzie on the behalf of the Department of Trade and Industry (DTI), investigated low frequency noise from windfarms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines, but that complaints attributed to low frequency noise were, possibly due to a phenomenon known as Amplitude Modulation (AM), described in **Section 8.6.2**.

22. In February 2013, the Environmental Protection Authority of South Australia published the results of a study into in infrasound levels near windfarms[58]. This study measured infrasound levels at urban locations, rural locations with wind turbines close by, and rural locations with no wind turbines in the vicinity. It found that infrasound levels near windfarms are comparable to levels away from windfarms in both urban and rural locations. Infrasound levels were also measured during organised shut-downs of the windfarms; the results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.

23. Bowdler *et al*., (2009)[59] concluded that:

24. "*...there is no robust evidence that low frequency noise (including 'infrasound') or ground-borne vibration from windfarms generally has adverse effects on windfarm neighbours*".

25. It is therefore not considered necessary to carry out specific assessments of low frequency noise or infrasound.

8.6.2 Amplitude Modulation

26. In its simplest form, Amplitude Modulation (AM), by definition, is the regular variation in noise level of a given noise source. This variation (the modulation) occurs at a specific frequency, which, in the case of wind turbines, is defined by the rotational speed of the blades, i.e. it occurs at the rate at which the blades pass a fixed point (e.g. the tower), known as Blade Passing Frequency.

[57] Hayes McKenzie (2006). 'The measurement of low frequency noise at three UK windfarms', Hayes Mckenzie, The Department for Trade and Industry, URN 06/1412, 2006.
[58] Environment Protection Authority (2013). 'Infrasound levels near windfarms and in other environments'. Available Online At: http://www.epa.sa.gov.au/xstd_files/Noise/Report/infrasound.pdf (Accessed on 26/06/2017).
[59] Bowdler et al (2009). 'Prediction and Assessment of Wind Turbine Noise: Agreement about relevant factors for noise assessment from wind energy projects'. Acoustics Bulletin, Vol 34 No2 March/April 2009, Institute of Acoustics.

27. A study[60] was carried out in 2007 on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford, which investigated the incidence of noise complaints associated with windfarms and whether these were associated with AM. The study defined AM as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency. Its aims were to ascertain the prevalence of AM on UK windfarm sites, to try to gain a better understanding of the likely causes, and to establish whether further research into AM is required.

28. The study concluded that AM had occurred at only a small number (4 of 133) of windfarms in the UK, and only for between 7% and 15% of the time. It also stated that, the causes of AM are not well understood and that prediction of the effect was not currently possible.

29. This research was updated in 2013 by an in-depth study undertaken by Renewable UK[61], which has identified that many of the previously suggested causes of AM have little or no association to the occurrence of AM in practice. The generation of AM is based upon the interaction of a number of factors, the combination and contributions of which are unique to each site. With the current state of knowledge, it is not possible to predict whether any particular site is more or less likely to give rise to AM, and the incidence of AM occurring at any particular site remains low, as identified in the University of Salford study. The report includes a sample planning condition to address AM, however that has not yet been validated or endorsed by UK Government.

30. In 2016, the IOA proposed a measurement technique[62] to quantify the level of AM present in any particular sample of windfarm noise. This technique is supported by the Department of Business, Energy & Industrial Strategy (BEIS, formerly The Department of Energy & Climate Change) who have published guidance[63], which follows on from the conclusions of the IOA study in order to define an appropriate assessment method for AM, including a penalty scheme and an outline planning condition. Notwithstanding this, the suggested outline planning condition is as yet unvalidated, remains in a draft form and would require site-specific legal advice on its appropriateness to a specific development. Section 7.2.1 of the GPG therefore remains current, stating: "*The evidence in relation to 'Excess' or 'Other' Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM*".

31. It is therefore not considered necessary to carry out specific assessments of amplitude modulation.

8.6.3 Construction Noise

32. In this context, construction noise refers to the decommissioning of the Operational Rigged Hill Windfarm, construction of the Development including the battery storage facility, and the eventual decommissioning of the Development.

33. The following legislation and standards are of particular relevance to construction noise:

- The Environmental Protection Act 1990 (EPA 1990)[64]; and
- BS 5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites (BS 5228)[65].

34. The EPA 1990 specifies mandatory powers available to Local Authorities in respect of any noise that either constitutes or is likely to cause a statutory nuisance, which is also defined in the Act. A duty is imposed on Local Authorities to carry out inspections to identify statutory nuisances, and to serve abatement notices against these. Procedures are also specified with regards to complaints from persons affected by a statutory nuisance. BS 5228 provides guidance on controlling noise and vibration from construction sites. It:

- Refers to the need for the protection against noise and vibration of persons living and working in the vicinity of and those working on construction sites;

[60] University of Salford (2007). 'Research into aerodynamic modulation of wind turbine noise'. Report by University of Salford, The Department for Business, Enterprise and Regulatory Reform, URN 07/1235, July 2007.
[61] Renewable UK (2013). 'Wind Turbine Amplitude Modulation: Research to improve understanding as to its Cause and effects', Renewable UK, 2013.
[62] Institute of Acoustics, (2016) A Method for Rating Amplitude Modulation in Wind Turbine Noise,
[63] BEIS, (2016), Review of the evidence on the response to amplitude modulation from wind turbines,
[64] The UK Government (1990) The Environmental Protection Act 1990.
[65] British Standards (2014), BS 5228-1:2009 + A1:2014 Code of practice for noise and vibration control on construction and open sites, part 1 - Noise.

- Recommends procedures for noise and vibration control in respect of construction operations; and
- Stresses the importance of community relations, stating that early establishment and maintenance of these relations throughout the carrying out of site operations will go some way towards allaying people's concerns.

35. The acceptability of construction noise is likely to be affected by the location of the Development relative to the noise-sensitive premises; existing ambient noise levels; the duration and working hours of site operations; the characteristics of the noise produced and the attitude of local residents to the site operator.

36. As the Development consists of the repowering of an operational windfarm, it is anticipated some elements of the existing site infrastructure will be reused such as access tracks, thereby minimising the amount of construction works required. In addition, due to the large separation distances likely to exist between the construction works and the nearest noise sensitive receptors, it is anticipated that a detailed assessment of construction noise effects will not be required. This will be discussed and agreed though consultation with the Council. Notwithstanding this, the ES will provide a summary of relevant guidance and best practice construction methods, along with a commitment to adhere to Best Practice means of controlling noise from construction activities, as advocated by BS 5228.

8.6.4 Battery Storage

37. Whilst feasibility work remains ongoing, there is potential for the Development to include a battery storage facility. Such facilities do not generate high levels of operational noise, and is likely to be limited to switchgear and cooling plant such as air conditioning units. The batteries and associated equipment will be housed within a suitable building, providing both visual and acoustic screening.

38. At this stage, the location and specification of the battery storage facility is yet to be established, and as such, it is not possible to fully scope out the element at this stage. However, once the general design of the facility has been finalised, noise modelling will be undertaken to establish likely operational noise levels at given distances. The location of the storage facility will be sensitively sited taking into account these identified separation distances to ensure no significant effects.

39. It is therefore anticipated that the resulting noise levels will be sufficiently low as to allow the facility to be scoped out of the ES. This will be confirmed through consultation with the Council, and subject to their agreement, the results will be included as an appendix to the ES in the interest of completeness.

8.7 Key Questions for Consultees

40. Key questions for Consultees are:

- Do the Consultees agree with the proposed methodology and general scope of assessment?
- Do the Consultees have any updates on the position of the Northern Ireland Assembly Environment Committee and the Department of the Environment on the use of ETSU-R-97 in the assessment of noise from windfarms? In the absence of such updates, is the approach proposed in this Scoping Request considered appropriate?
- Do the Consultees agree that the subtraction of predicted noise levels due to the existing turbines from the measured background noise level is the most suitable methodology to ensure a robust background noise dataset?
- Do the Consultees have details of any further cumulative developments in the locality which it considers may result in potential significant effects, which should be assessed as part of the EIA process for the Development?

9 Archaeology and Cultural Heritage

9.1 Introduction

1. The assessment will consider direct, indirect (largely visual) and cumulative effects as a result of the Development upon the following receptors:

- Archaeology - above and below ground, designated or not. Consideration will be given to the potential for currently unknown (buried) archaeological remains to exist within the Development; and
- Cultural Heritage – World Heritage Sites, Scheduled Monuments, Listed Buildings, and Registered Historic Parks, Gardens and Demesnes, and Conservation Areas.

2. The assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case scenario, than the decommissioning of the repowered wind turbines alone, should this be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

4. The assessment will be conducted with reference to the relevant statutory and planning frameworks for cultural heritage. In addition to those mentioned in the Planning and Policy Section (see **Section 4** of this Scoping Request), cognisance will also be taken of Planning Policy Statement (PPS) 6: Planning, Archaeology and Built Heritage (March 1999)[66] and the Strategic Planning Policy Statement for Northern Ireland (SPPS)[67] (September 2015).

5. At present, there is no specific Northern Ireland guidance for assessing archaeological effects; however, several government and professional organisations have established guidelines and best practice guidance relevant to assessing effects on archaeology and cultural heritage. These include:

- Standards and Guidance for Archaeological Desk-Based Assessments provided by the Chartered Institute for Archaeologists (CIfA)[68];
- Historic England's *The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning:3*[69]; and
- Historic Environment Scotland's *Managing Change in the Historic Environment: Setting*[70].

9.2 Suggested Methodology

6. A Desk-Based Assessment (DBA) of cultural heritage records, in and around the Development, as shown alongside the Site Boundary in **Figure 9.1** of Appendix B, is underway and will be compiled to establish the baseline against which the impact assessment will be carried out. Data will be gathered from the following sources:

[66] Department of the Environment (1999) PPS 6: Planning, Archaeology and the Built Heritage. Available online at https://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/pps06-archaeology-built-heritage.pdf [Accessed on 01/06/2017]
[67] Department of the Environment (2015) Strategic Planning Policy Statement for Northern Ireland (SPPS). Available at https://www.planningni.gov.uk/index/policy/spps_28_september_2015-3.pdf [Accessed 01/06/2017]
[68] Chartered Institute for Archaeologists (December 2014, Updated January 2017) Standards and Guidance for Historic Environment Desk-Based Assessment. Available at http://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_3.pdf [Accessed 01/06/2017]
[69] Historic England (2015) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning: 3. Available at https://content.historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/gpa3.pdf/ [Accessed 01/06/2017]
[70] Historic Environment Scotland (June 2016) Managing Change in the Historic Environment: Setting. Available at https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/managing-change-in-the-historic-environment-guidance-notes/ [Accessed on 01/06/2017]

- Department for the Communities' datasets including: Scheduled Historic Monument Areas, Areas of Special Archaeological Interest, Defence Heritage, Historic Parks and Gardens, Industrial Heritage Record, Listed Buildings, Northern Ireland Sites and Monuments Records, and Areas of Archaeological Potential;
- Cartographic Evidence as held by the Public Record Office of Northern Ireland (PRONI)[71];
- Contemporary Aerial Photography[72] as held by PRONI; and
- Local archives and libraries, as relevant.

7. A study area of 1 kilometre (km) around the Site Boundary, shown in **Figure 9.1** of Appendix B, will be used to collect data to inform on the archaeological potential of the Site (1 km Study Area).

8. The DBA will be augmented by a walkover survey to provide information on the archaeological potential of the Site, and to validate the documentary evidence. This fieldwork will be conducted to:

- Assess and validate documentary data collected;
- Identify the extent and condition of any visible archaeological remains; and
- Determine whether previously unrecorded historic features are visible.

9. Subject to the findings of the DBA the requirement for and extent of any additional pre-determination surveys will be agreed, with an emphasis on avoiding direct effects on any known cultural heritage features through careful design of the Development including all infrastructure.

10. An assessment will be made of the potential indirect effects upon heritage assets and their setting including historic landscapes. The assessment will proceed from a consideration of the 'sensitivity' of a cultural heritage feature against the 'magnitude' of any potential change, resulting from the Development, to arrive at the 'significance' of the effect. The assessment of sensitivity of archaeological and historical assets reflects the relative weight which statute and policy attach to them, principally as published in PPS6[66].

11. For the purposes of this document, designated heritage assets include World Heritage Sites, Scheduled Monuments, Listed Buildings, and Registered Historic Parks, Gardens and Demesnes as well as Conservation Areas; which have been considered out to a distance of 5 km from the Site Boundary (5 km Study Area). It is considered that the designated assets most likely to receive indirect effects are those that are located within the 5 km Study Area. These have been listed below (**Section 9.3**) and are shown on **Figure 9.1** of Appendix B.

12. This assessment will also take account of the extent of the potential visual impact as determined through the LVIA. The assessment may also include visual representations such as photomontages and/or wirelines, as appropriate.

13. Initial consultation has been undertaken with the Historic Environment Division of the Department for Communities and the Council with regards to the sourcing of baseline information, Consultation will be ongoing as part of the assessment process. The archaeology and cultural heritage assessment will include proposals for mitigation of any identified significant effects, where necessary.

9.3 Baseline

14. As part of the DBA, initial information relating to archaeology and cultural heritage has been gathered through a preliminary desk top records search using available online resources to indicate potential features of interest.

15. There are no designated cultural heritage features within the Site Boundary. An initial review of records held by the Northern Ireland Sites and Monuments Record (NISMR) database[73] shows that there are three non-designated heritage record situated within the red-line boundary as shown in **Figure 9.1** of Appendix B. These are three cropmarks located along the

[71] PRONI Historical Map Viewer. Available at https://www.nidirect.gov.uk/services/search-proni-historical-maps-viewer [Accessed 1/6/2017]
[72] *Ibid*

[73] Department for Communities. Northern Ireland Sites and Monuments Record (NISMR) Online Interactive Database: https://www.communities-ni.gov.uk/services/sites-and-monuments-record (Accessed on 04/04/2017)

western edge of the Site Boundary (reference numbers: LDY017:024, LDY017:030 and LDY017:037). These sites will be avoided as part of the site design process so that they will not receive a direct effect.

16. Preliminary record searches indicate that there are 20 recorded archaeological features within 1 km of the Site Boundary (1 km Study Area) (one Scheduled Monument, one Listed Building and 18 records from the Sites and Monuments Record dataset). These are detailed in **Table 9.1**.

Table 9.1: Recorded Archaeological Remains within the 1 km Study Area

Source Reference	Name and Description
SMNO 017:058 LDY017:058	Cairn: The Fairy Bush
HB02/08/010	B2 Listed House, 21 Lislane Road, Gortnarney, Limavady, Derry / Londonderry
LDY010:012	Holy Well: St. Lowry's Well or Tobar Loora
LDY010:024	A.P. SITE - circular cropmark
LDY010:025	A.P. SITE - circular enclosure
LDY010:026	A.P. SITE - enclosure & field banks
LDY010:029	A.P. SITE - circular cropmark
LDY010:037	STANDING STONE (O.S. memoir site, unlocated)
LDY010:038	KNOCKNAGINN. URN BURIALS (O.S. memoir site, unlocated)
LDY017:022	A.P. SITE - cropmark
LDY017:023	A.P. SITE - circular cropmark
LDY017:024	A.P. SITE - circular cropmark (within Development Red-Line Boundary but not within Developable Area)
LDY017:030	A.P. SITE – cropmarks (within Development Red-Line Boundary but not within Developable Area)
LDY017:032	A.P. SITE - circular cropmark
LDY017:033	A.P. SITE - circular cropmark
LDY017:035	A.P. SITE - circular cropmark
LDY017:036	A.P. SITE - circular cropmark
LDY017:037	A.P. SITE - sub-circular cropmark (within Development Red-Line Boundary but not within Developable Area)
LDY017:038	A.P. SITE - CASHEL?
LDY017:056	STANDING STONE (O.S. memoir site, unlocated)

9.4 Key Sensitivities

17. Preliminary desk studies indicate that there are no statutory designated heritage assets within the Site Boundary. Within the 5 km Study Area, there are no World Heritage Sites situated within the 5 km Study Area; however, there are 13 Scheduled Monuments, 22 Listed Buildings, and three Historic Parks, Gardens and Demesnes. These are detailed in **Tables 9.2, 9.3 and 9.4**. Due to their proximity to the Development, these are the assets considered most likely to receive a significant indirect effect upon their setting as a result of the Development and require further assessment, if they fall within the ZTV. **Figure 9.1** of Appendix B shows the location of these sites within the 5 km Study Area.

Table 9.2: Scheduled Monuments within the 5 km Study Area

Scheduled Monument Number	Name
010:001	Drumachose Church
010:006	Rath
010:007	Cairn and enclosure
010:011	Rath
010:014	Sweat house

Scheduled Monument Number	Name
011:001	Graveyard
016:003	Castle (site): O Cahan's Castle
017:001	Large enclosure: Cashel
017:004	Rath; King's Fort
017:010	Central court tomb: 'stone circle'
017:016	Killeen, Possible Souterrain
017:018	Wedge Tomb
017:058	Cairn: The Fairy Bush

Table 9.3: Listed Buildings within the 5 km Study Area

Listed Building Number	Address	Use	Category
HB02/03/008	Dogleap Powerhouse Roe Valley Country Park 43 Dogleap Road Largy Limavady Derry / Londonderry BT49 9NN	Power Station (currently museum)	B+
HB02/03/009	Largy Bridge Dogleap Road Ballykelly Derry / Londonderry BT49 9NN	Bridge	B2
HB02/03/014 B	South Watch Tower Roe Green Roe Valley Country Park Largy Limavady Derry / Londonderry	Watch tower	B2
HB02/03/015	Weaving Shed Museum Roe Valley Country Park Dogleap Road Largy Limavady Derry / Londonderry BT49 9NN	Mill (currently museum)	B2
HB02/08/001	St Matthew's R C Church 300 Drumsurn Road Limavady Derry / Londonderry BT49 0PX	Church	Record Only
HB02/08/003	Cenotaph Ballyquin Road Limavady Derry / Londonderry	Memorial	B2
HB02/08/004	Church of Ireland Church Ballyquin Road Carrick	Church	B1

Listed Building Number	Address	Use	Category
	Limavady Derry / Londonderry BT49 9HA		
HB02/08/007	St Canice's C of I Church Balteagh Parish Drumsurn Road Limavady Derry / Londonderry BT49	Church	Record Only
HB02/08/009	Carrick Footbridge Carrick East Roe Valley Country Park Limavady Derry / Londonderry BT49 9HA	Bridge	B+
HB02/08/010	21 Lislane Road Gortnarney Limavady Derry / Londonderry BT49 OPH	House	B2
HB02/08/022	Carrickmore House 175 Ballyquin Road Limavady Derry / Londonderry BT49 9HA	Rectories/ Manses (current house)	B1
HB02/11/002 B	Drenagh Estate Coach house 17 Dowland Road Fruithill Limavady Derry / Londonderry BT49 0HP	Estate Related Structure	B2
HB02/11/002 C	Drenagh Estate Gardener's House & Barn 17 Dowland Road Fruithill Limavady Derry / Londonderry BT49 0HP	Estate Related Structure	B2
HB02/11/002 E	Viewing Platform, Drenagh Estate 17 Dowland Road Fruithill Limavady Derry / Londonderry BT49 0HP	Garden Features	B1
HB02/11/002 G	East lodge (Logan's Lodge), Drenagh Demesne 38 Broad Road Limavady Derry / Londonderry	Gates/ Screens/ Lodges	B1
HB02/11/002 I	Gamekeeper's House (The Pheasantry) Drenagh Demesne	House	B2

Listed Building Number	Address	Use	Category
	66 Broad Road Limavady Derry / Londonderry BT49 OQH		
HB02/11/003	East Lodge (Logans Lodge) Drenagh Demesne Broad Road		Not Allocated
HB02/11/005	Appletree House 31 Drumsurn Road Limavady Derry / Londonderry BT49 0PD	House	Record Only
HB02/11/020	77 Bolea Road Bolea Limavady Derry / Londonderry BT49 OQT	School (currently house)	B2
HB02/15/006	Roe Valley Hospital (Former Workhouse) Benevenagh Avenue Limavady Derry / Londonderry BT49 OAQ	Work house (current hospital building)	B+
HB03/04/010	St Mary's Roman Catholic Church Boleran Coleraine Derry / Londonderry BT51	Church	B2
HB03/04/025	21 Boleran Park Garvagh Coleraine Derry / Londonderry BT51 5EJ	House (currently farm buildings)	B2

Table 9.4: Historic Parks, Gardens and Demesnes within the 5 km Study Area

Park and Garden Reference	Name and Description
L-006 (Registered)	Drenagh
L-041 (Supplementary)	Dog Leap
L-022 (Supplementary)	Roe Valley Park

9.5 Scoped In Effects

18. Known archaeology will be avoided during site design, where possible. Direct effects upon other cultural heritage sites identified during the DBA (i.e. those not currently recorded within the NISMR) should they occur, will be assessed as part of the EIA. The assessment of physical effects will consider direct effects where sites or potential sites / buried archaeology are in danger of being disturbed or destroyed during the decommissioning / construction phase of the Development.

19. The assessment of indirect effects considers changes in setting which have the potential to affect heritage assets. For the purposes of evaluating indirect effects upon the setting of heritage assets, designation status and proximity to the Development, where it is also falls within the Zone of Theoretical Visibility (ZTV), will determine whether further assessment is required. As such, nationally designated sites (e.g. Parks, Gardens and Demesnes, Listed Buildings and Scheduled

Monuments) that are within the 5 km Study Area and the ZTV will continue to be assessed as part of the EIA at this stage with the final list of assets requiring assessment to be agreed during consultation.

20. For the purposes of the assessment of cumulative effects, only windfarm developments (operational, under construction, consented or application stage windfarms) within approximately 10 km of the Site Boundary will be considered. The potential for a significant cumulative effect is considered likely to occur only where the ZTVs for the Development and cumulative windfarms overlap, i.e. where each is theoretically simultaneously visible.

9.6 Scoped Out Effects

21. The baseline data presented in **Section 9.3** and **Figure 9.1** of Appendix B indicates that there are three known archaeological sites (all cropmarks) within the Site Boundary: LDY017:024, LDY017:030 and LDY:017:037. These sites will be avoided through site design and do not require assessment for direct effects within the ES.

22. The assessment of indirect effects upon the setting of undesignated archaeology and cultural heritage assets is broadly based upon its designation status, or lack thereof. Undesignated sites are often of low sensitivity and therefore will not receive a significant indirect effect as defined by the EIA Regulations. As such, they can be scoped out of the EIA at this stage.

23. Nationally Designated Sites (Listed Buildings and Scheduled Monuments) that are not within the ZTV will not receive a significant direct effect upon their setting due to having no visibility of the Development. Those sites with/without visibility of the Development will be determined after final design, and agreed during consultation.

9.7 Key Questions for Consultees

24. Key questions for Consultees are:

- Do the Consultees agree with the proposed methodology and scope of assessment?
- Do the Consultees have any information regarding current or recent archaeological work or projects being undertaken within or in the 5 km Study Area, particularly those whose results may not yet be recorded in the Northern Ireland Sites and Monuments Records?
- Are the Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Development?
- Do the Consultees have details of any cultural heritage sites in the vicinity of the Development which it considers may require further consideration within the EIA process?

10 Access, Traffic and Transport

10.1 Introduction

1. The Access, Traffic and Transport Chapter of the Environmental Impact Assessment (EIA) will consider the effects of vehicle movements to and from the Development. Vehicle movements to the Development will consist of abnormal load vehicles (ALVs), heavy goods vehicles (HGVs), light goods vehicles (LGVs) and cars.

2. The assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case scenario than the decommissioning of the repowered wind turbines alone, should this be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

4. Although the port of delivery and the associated route are not yet confirmed at this stage, Londonderry Port is the closest facility for the delivery of turbines. Following a more detailed routeing analysis, taking account of any potential constraints, further information will be presented in the ES and the associated Abnormal Load Route Assessment (ALRA). This Scoping Request will outline the proposed methodology to be employed in the EIA of Access, Traffic and Transportation effects on the chosen delivery routes and on the wider road network.

5. During the decommissioning / construction phase which will include the decommissioning of Operational Rigged Hill Windfarm, a defined delivery route(s) from the port of delivery will be used by ALVs carrying wind turbine components. The physical suitability of this route(s) will be assessed in the ALRA. Any improvement works required to allow safe passage will be defined. HGVs, LGVs and cars, used for delivery of other equipment, construction materials and for access by site personnel, may approach the site via a defined access route, or from a variety of routes depending on the point of origin. A route for these vehicles presenting worst case parameters for the purposes of the assessment will be defined, this route may or may not be the same as that used by ALVs.

10.2 Suggested Methodology

6. In order to ensure a rigorous assessment, the following broad methodology will be employed:

- A worst case scenario assessment will be undertaken in which each potential route is assessed as if the total volume of traffic were to use it.

7. The assessment methodology will be based on '*Guidelines for the Environmental Impact of Road Traffic.*'[74] A screening process, using two broad rules from these guidelines, will be employed to identify roads on which potential significant effects may occur. These are:

- Roads where traffic is predicted to increase by more than 30% a result of the Development, or where the number of HGVs is predicted to increase by more than 30% must be assessed; and
- Roads in specifically sensitive areas where overall traffic flow or HGVs are predicted to increase by more than 10% must be assessed.

8. Where the predicted increase is lower than threshold, the guidelines suggest the significance of effects can be stated to be low or not significant and further detailed assessment is not warranted.

[74] Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic.

9. It is worth noting that on roads where existing traffic levels are generally low (e.g., rural roads and some unclassified roads), any increase in traffic flow may result in a predicted increase that would be higher than the guideline thresholds. In these situations, it is important to consider any increase in terms of overall traffic flow in relation to the capacity of the road before making a conclusion in EIA terms.

10. Any change in traffic flow which is greater than the thresholds set out in the guidelines would be subject to further analysis to establish if the increased traffic flow is within the capacity of the road. In instances where traffic flow is higher than the IEMA (1993)[74] guideline thresholds but within the capacity limits of the road and the potential magnitude on receptors is minor or negligible, this increase would generally be considered to be not significant. It is acknowledged that capacities can be reduced by local conditions that cannot be accounted for within the relevant guidance such as temporary road works or road failure.

11. The Applicant does not propose to submit a formal Transport Assessment (TA) to accompany the planning application for the Development, as TAs principally relate to developments that generate a significant permanent increase in traffic as a direct consequence of function (e.g. retail parks). The potential for significant effects resulting from wind farm traffic are only likely to occur during the decommissioning / construction phase and are temporary, and therefore will not result in a permanent significant increase.

10.2.1 Magnitude of Effect

12. The magnitude of the effect of increase in traffic is a function of the existing traffic volumes on the surrounding highway network, the percentage increase associated with the proposed scheme and the changes in the type of traffic.

13. These guidelines are intended for the assessment of environmental effects of road traffic associated with major new developments giving rise to traffic generation, as opposed to short-term construction. In the absence of alternative guidance and, as the traffic generation during the operational phase is very low, these guidelines will be applied to assess the short-term construction phase of the Development.

14. **Table 10.1** shows the criteria to be employed to determine the magnitude of the effect of increase in traffic. The absolute increase refers to the change in number of vehicles per hour while the percentage increase refers to the change in number of vehicles per hour expressed as a percentage of the base traffic flows.

Table 10.1: Magnitude of the Effect of Increase in Traffic

Percentage increase (%) (Vehicles per hour of base traffic flows)	Absolute increase (Vehicles per hour)			
	< 30	30 - 60	60 - 90	> 90
< 5	Negligible	Negligible	Negligible	Negligible
5 – 10	Negligible	Low	Low	Low
10 – 20	Low	Low	Medium	Medium
20 – 30	Medium	Medium	High	High
> 30	High	High	High	High

10.2.2 Significance of Effect

15. The significance of effect will be determined by considering both the sensitivity of the receptors and magnitude of effects as shown in **Table 2.3** in **Section 2: Environmental Impact Assessment**. The receptors will be identified as the physical resource or user group that would potentially be affected by the Development, e.g. human being(s) and the transport network.

10.2.3 Cumulative Effects

16. In accordance with guidance, the assessment will consider the potential for any significant cumulative effects that may occur in combination with other consented, and/or in planning, traffic-generating developments that exist within the study area as these may generate traffic movements above the recorded baseline levels. Consultation will be undertaken with relevant authorities to establish where significant cumulative effects may occur, and with which developments.

10.2.4 Assessment of Effects

17. The determination of the significance of effects will be undertaken by reviewing the outline proposals for the Development, establishing the parameters of the road traffic that may cause an effect and quantifying these effects. The study will consider effects during the decommissioning / construction phase as follows:

- Define the most suitable route(s) of turbine delivery and other construction traffic to the Development, seeking to utilise the existing trunk road network, and avoiding settlements/sensitive receptors where possible;
- Consultation with the relevant highways authorities to identify constraints;
- Undertake an ALRA, or utilise historical assessments where appropriate, to define possible constraints to the delivery of ALVs to the site. This will include Swept Path Analysis, where required, to define locations where existing road alignments constrain the proposed delivery vehicles;
- Procure existing traffic data and arrange additional surveys where necessary;
- Undertake route inspections including detailed observations at each community potentially affected by the Development within the study area. We would provide general effects statements for major roads; however, the detailed and numeric assessment would be limited to the roads in closer proximity to the site;
- Based on the route inspections, sensitive receptors would be identified;
- An initial assessment of traffic generation from the Development, assignment of traffic to the network and an initial assessment of effects would be undertaken. This would be based on professional judgement rather than transportation network modelling. The Applicant will endeavour to utilise local sources of materials, wherever possible, to minimise traffic impacts;
- Obtain refined project needs, refine traffic generation, and reassess effects using obtained / gathered baseline traffic data;
- Assess residual effects, and any required residual mitigation needs; and
- Identify and assess the potential for cumulative effects based on other known developments.

10.3 Baseline

18. Baseline traffic flow conditions on routes within the vicinity of the Development will be established and detailed in the EIA. This baseline will include traffic from the Operational Rigged Hill Windfarm. The geographic scope of the baseline assessment will be confirmed in consultation with the relevant authorities as appropriate. The worst case scenario will be defined and assessed.

19. Where publically available traffic count information is available, for example from Transport NI, then this will be used as the basis for baseline assessment. Where such information is not available then traffic surveys will be undertaken. Baseline traffic data will be factored to take into account traffic growth between the date of recording and the anticipated date of construction.

20. The vehicles servicing the Operational Rigged Hill Windfarm have been doing so since 1994 and, as such, they form part of the existing baseline.

10.4 Key Sensitivities

21. The sensitivity of receptors will be determined based on the value of the affected resource and the extent of the area that might be affected by the Development. The receptor sensitivity is summarised as follows:

- High sensitivity refers to receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, retirement homes, residential roads without pedestrian or cyclist facilities, and accident black spots;
- Medium sensitivity refers to traffic flow sensitive receptors: congested junctions, community centres, parks, businesses with roadside frontage, recreation facilities;
- Low sensitivity refers to receptors with some sensitivity to traffic flows: public open spaces, nature conservation areas, listed buildings, tourist attractions, and residential roads with adequate footway provision, places of worship; and
- Negligible sensitivity refers to receptors with very low sensitivity to traffic flows; receptors that are sufficiently distant from the affected roads and junctions.

10.5 Scoped in Effects

22. The potential significant effects that are to be considered during the assessment are:

- Traffic Generation;

- Accidents and Safety;
- Driver Delay; and
- Pedestrian Amenity.

23. While initially considered within the assessment, the following potential effects may be scoped out based on the defined routes to the site:

- Hazardous Loads;
- Pedestrian Delay;
- Visual Effects;
- Air Quality;
- Noise and Vibration; and
- Severance.

10.6 Scoped Out Effects

24. The vehicles servicing the Operational Rigged Hill Windfarm have been doing so since 1994, as such they form part of the existing baseline. Since the number of vehicles required to operate and maintain the Development, following its construction will be similar to those currently accessing the site, it is proposed to scope out operational traffic from the assessment as there is no anticipated increase to the baseline traffic flow; as such no significant effects are anticipated.

10.7 Key Questions for Consultees

25. Key questions for Consultees are:

- Do the Consultees agree with the proposed methodology and scope of the traffic and transportation assessment; and
- Do the Consultees agree the operational traffic effects can be scoped out of the assessment?
- Are the Consultees aware of any specific access restrictions or limitations in the vicinity of the Site?
- Do the Consultees hold any information on any other developments, consented or in planning, where there may be potential for any significant cumulative effects to arise?

11 Hydrology, Hydrogeology, Geology, Soils and Peat

11.1 Introduction

1. This section details the proposed methodology with respect to effects on hydrology and hydrogeology, geology and soils and presents the suggested scope of the assessment in terms of those receptors to be scoped in and scoped out of the assessment process based on the baseline information and fieldwork undertaken to date. **Section 11.2** focuses on the hydrological aspects of the Development whilst **Section 11.3** details the geological and soils aspects including peat.

2. The assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case scenario for assessment purposes, than the decommissioning of the repowered wind turbines alone, should this be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

11.2 Hydrology and Hydrogeology

11.2.1 Suggested Methodology

11.2.1.1 Study Area

4. The hydrological and hydrogeological assessment will use a study area based on downstream hydrological connectivity of water bodies to the Development, within a hydrological catchment of 10 km from the Site Boundary (the Study Area). At distances greater than 10 km, it is considered that developments of this nature are unlikely to have potential chemical or sedimentation effects, due to natural attenuation and dilution of potentially polluting chemicals and sediments in the water environment.

5. The study area for potential effects on public and private water supplies is defined as a 2 km radius of the Site Boundary as detailed on **Figure 2.1** of Appendix B.

6. The following elements of work have been identified:

- Consideration of relevant guidance and good practice;
- Consultation with stakeholders;
- Desk-based study;
- Field Surveys; and
- Assessment of Effects.

7. It should be noted that a desk-based study and field surveys have been undertaken, the findings of these are presented in **Section 11.2.3**. The findings have been used to define which receptors will require assessment within the EIA process and effects which can be scoped out of the assessment at this stage.

11.2.1.2 Relevant Hydrology and Hydrogeology Guidance

8. The hydrology and hydrogeology assessment of the Development will be undertaken in accordance with good practice guidance (Guidance for Pollution Prevention (GPPs) and Pollution Prevention Guidelines (PPGs)), which includes:

- PPG1: General guide to the prevention of water pollution (July 2013);
- GPP2: Above ground oil storage tanks (January 2017);
- PPG4: Disposal of sewage where no mains drainage is available (July 2006);
- GPP5: Works and maintenance in or near water (January 2017);
- PPG6: Working at construction and demolition sites (2012);

- GPP8: Safe storage and disposal of used oils (July 2017);
- PPG18: Managing fire water and major spillages(June 2000);
- GPP21: Pollution incident response planning (July 2017); and
- PPG22: Incident response – dealing with spills (April 2011).

9. Other relevant guidance and regulation comprises the following:

- Planning Policy Statement (PPS) 18: Renewable Energy (NI Planning Service, 2009);
- The Construction Industry Research and Information Association (CIRIA) Report C689 Culvert Design and Operation Guide (2010);
- CIRIA Report C532 Control of water pollution from construction sites (2001);
- CIRIA Report C648 Control of water pollution from linear construction proposed developments: technical guidance (2006);
- CIRIA Report (C741) Environmental Good Practice on Site Guide (2015);
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2006);
- PPS 15: Planning and Flood Risk (NI Planning Service, 2006);
- The Regional Development Strategy 2035 (RDS);
- Forest and Water, UK Forestry Standard Guidelines (Forestry Commission, 2011); and
- Best Practice Guidelines for the Irish Wind Energy Industry (Irish Wind Energy Association, Wind Skillnet, 2012).

11.2.1.3 Consultation

10. To identify key sensitive receptors and to gather environmental baseline data, consultation with NIEA, Northern Ireland Water, The Drinking Water Inspectorate (DWI), The Department of Agriculture, Environment and Rural Affairs Northern Ireland (DWI NIEA) and Causeway Coasts and Glens Borough Council is underway.

11.2.1.4 Desk Study

11. An initial desk study has been undertaken to determine the baseline characteristics by reviewing available information pertaining to hydrology and hydrogeology. This includes a review of published geological maps, Ordnance Survey (OS) maps and aerial photographs.

12. The desk study has identified sensitive receptors which may be potentially affected by the Development and has established the conditions of the hydrological and geological environment. The desk study findings are presented within **Section 11.2.3**.

11.2.1.5 Field Survey

13. Following the desk-based study, a site walkover was undertaken in June 2017 to verify the location and nature of watercourses and water bodies within the immediate hydrological catchment of the Site. The walkover recorded the presence / absence of hydrological features and focused on the Indicative Developable Areas shown in **Figure 2.1** of Appendix B.

14. In addition, dipwells have been installed at 30 locations across the Site to monitor near surface water levels within the peat onsite. The dipwells will be monitored at regular intervals under a variety of conditions and the results will inform the assessment of potential hydrological effects upon the peat resource.

11.2.2 Assessment of Effects

15. An assessment of the potential risks and effects to the hydrological environment throughout all stages of the Development on receptors will be made using professional judgement and a source-pathway-receptor model. The significance of the potential effects of the Development will be classified by taking into account the sensitivity of the receptor and the magnitude of the potential effect. The following will be undertaken as part of the assessment:

- Preparation of a catchment plan;
- Identification of key sensitive receptors, including: surface and ground water features, catchments; Groundwater Dependent Terrestrial Ecosystems (GWDTEs), active peatlands, public and private water supplies;
- Avoidance of effects through the design process by utilising buffers of 50 m from natural watercourses and 20 m from man-made drains of greater than 0.5 m depth and width. Drains of less than 0.5 m in depth and width are not considered

to form a constraint to development, as they can be redirected and managed through good construction practice, which will ensure the baseline flow conditions are maintained;
- Identification of, and cumulative assessment of, other similar developments, either built, consented or in planning within the Study Area;
- Collation of flood plain information, water quality data and groundwater vulnerability information;
- Risk assess the potential effects of the Development on key sensitive receptors throughout all phases of development to inform a statement of significance in accordance with the EIA Regulations; and
- Provision of an outline Water and Construction Management Plan (WCMP).

16. The outline WCMP will be included as part of the embedded Development design. The outline WCMP will comprise methods and works that are established and effective measures to which the Applicant will be committed to through an appropriately worded planning condition. Therefore, the assessment of potential significance of effects arising from the Development will be carried out assuming that the measures outlined within the WCMP are inbuilt.

11.2.3 Baseline

17. An initial review of the River Basin Management Plan (RBMP) data indicates that there are two classified water bodies within the Study Area, which will need to be considered during the design iterations and EIA process. The Development is located in the overall catchments of the Castle River (a tributary of the River Roe) which is in the North West River Basin District and the Aghadowey River which is located in the Neagh Bann River Basin District.

18. The Castle River, located approximately 1.7 km to the west of the Site Boundary, is classified as possessing good overall status while the Aghadowey River, located approximately 5.8 km east of the Development, is classified as having moderate overall status.

19. Minor unnamed watercourses drain the Development and discharge into Castle River, while the headwaters of Gamlaght River issue approximately 250 m east of the Site Boundary before discharging into Curaghglass River, which in turn discharges into Aghadowey River.

20. The Castle River discharges into the River Roe approximately 6.5 km northwest of the Site Boundary, which is designated as an SAC for supporting otter and Atlantic salmon. Given the distance from the Development and the potential for dilution and dispersion within watercourses between the Development and the designation, it is not anticipated that an Appropriate Assessment under the Habitats Regulations will be required. This will be confirmed upon completion of the baseline studies.

21. The groundwater body under the Study Area is an unnamed waterbody within extrusive rocks of paleogene age, which is classified as 'moderately productive aquifer'. Consultation with NIEA will identify groundwater vulnerability and aquifer productivity, which will inform the EIA process and design of the Development.

22. An initial desk-based review shows that there are areas of peat located within the Site. It is therefore highly likely that Ground Water Dependent Terrestrial Ecosystems (GWDTEs) will be present within the Site, and field surveys have therefore already been undertaken in conjunction with an ecologist to confirm the presence and condition of this receptor.

23. Flood Maps (NI) show that the Indicative Developable Area, as shown in **Figure 2.1** of Appendix B, is located outside floodplains for river and coastal flooding. As such, a concise section within the ES will consider how the Development will impact surface water run-off and effects on offsite receptors, in accordance with PPS 15: Planning and Flood Risk[75].

11.2.3.1 Field Surveys

24. Following the desk-based study, a site walkover was undertaken in June 2017 to verify the location and nature of watercourses and water bodies within the immediate hydrological catchment of the Site. The walkover recorded the presence / absence of hydrological features and focused on the Indicative Developable Areas shown in **Figure 2.1** of Appendix B.

[75] Department for the Environment (2006). Planning Policy Statement 15: Planning and Flood Risk. Available online at: https://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/pps15-flood-risk.pdf [Accessed on 05/07/2017]

25. Few natural drainage features are present in the vicinity of the existing wind farm. There are a number of drainage ditches and minor ephemeral watercourses approximately 500 m to the west of the Site, which originate from marshy areas and channels on the shoulder of the topographical ridge which bisects the Site Boundary.

26. A steeply incised tributary of Castle River was observed within the south west section of the Site Boundary, which measures approximately 2 m in width.

27. Morphology is typical of upland watercourses, which are generally evenly dispersed through flat boggy ground from their upper reaches, becoming increasingly steep and faster flowing as they progress downstream to the primary rivers.

28. Additionally, a network of linear drainage ditches was observed in the southern section of the Site. Water was not observed within the ditches, suggesting the peat and superficial geology in these areas is well drained and the ditches convey near-surface water quickly in response to precipitation events.

29. Baseline hydrochemistry data was obtained from unnamed tributaries of Castle River, where they are culverted under Terrydoo road, by taking manual spot samples using a hand held water quality meter. The data suggests the watercourses to the west of the Site are typical of upland rural areas i.e. of good water quality with parameters within the expected ranges. Water quality information collected as part of the hydrological site walkover will be provided for use in the Fisheries Assessment.

11.2.4 Key Sensitive Receptors

30. The following key sensitive receptors have been identified through desk-based research and a field visit:

- Castle River and tributaries;
- Aghadowey River and tributaries;
- River Roe SAC;
- Bedrock aquifer and localised sand and gravel aquifers;
- Active peat;
- Private and public water supplies;
- Natural surface water drainage patterns; and
- Groundwater levels and groundwater movement.

11.2.5 Scoped In Effects

31. The following effects will continue to be considered within the EIA at this stage:

- Chemical pollution;
- Sedimentation as a result of the decommissioning / construction phases;
- Acidification of watercourses;
- Impediments to watercourse and near-surface water flow;
- Increased run-off and flood risk;
- Migration of pollutants from contaminated land / previously developed areas;
- Compaction of superficial deposits; and
- Consideration of impact on groundwater table and flow paths from decommissioning of existing infrastructure.

11.2.6 Scoped Out Effects

32. As no private water supplies have been identified within 2 km of the Indicative Developable Area, potential effects on private water supplies will be scoped out of the ES.

33. Receptors beyond the 10 km Study Area will not be considered further, as beyond this distance, it is considered that developments of this nature are unlikely to have potential chemical or sedimentation effects, due to natural attenuation and dilution of potentially polluting chemicals and sediments in the water environment.

11.3 Geology and Soils

34. The purpose of the geology and soils assessment will primarily be to:

- Identify any areas susceptible to peat slide, using peat thickness and digital terrain model (DTM) data to analyse
- slopes;
- Support the identification of active and inactive peatlands;
- Assist in the design process for turbines and other infrastructure to guide infrastructure to areas of no peat, shallow peat or inactive peatlands;
- Assess potential effects on soils, peat and underlying geology; and
- Develop an acceptable code for working within the Site that will adopt best practice procedures, effective management and control of onsite activities to reduce or offset any detrimental effects on the geological, hydrogeological and hydrological environment.

11.3.1 Suggested Methodology

35. It has been recognised that the design of the Development is likely to be affected by the presence of peat, both as a physical consideration in terms of stability and engineering properties, and as a habitat resource. Active peatland is identified as a priority habitat in accordance with the EC Council Directive 92/43/EEC Conservation of Natural Habitats and Wild Fauna and Flora (the Habitats Directive) which is implemented by law in Northern Ireland through Article 3 of the Planning (Northern Ireland) Order 1991 and Planning Policy Statement 18, August 2009 by Department of the Environment (DOENI)[76].

36. It was established that site surveys would take place at a pre-scoping stage to ascertain the extent and nature peat within the study area and develop a robust investigation approach suitable to the identification of these characteristics. Initial desk based researches and co-ordination with the project ecologist defined extents of active, possibly active and not-active peat. This approach informed an enhanced Phase 1 peat probing and National Vegetation Classifications (NVC) survey, this is discussed in **Section 6: Ecology**.

37. The principles of the enhanced Phase 1 study are:

- To collect site data that is robust and auditable, and that permits assessment;
- To undertake an assessment of baseline (existing) conditions based on an agreed methodology; and
- Permit an EIA to be undertaken that appropriately addresses the peat resource, and allows viable embedded mitigation and good design in relation to active peatlands.

11.3.1.1 Enhanced Phase 1 Peat Study

38. Acknowledging the influence that peat classification will have on Development design, the enhanced Phase 1 peat depth survey has been completed and the extent of survey has been based on the initial NVC assessment to ensure the scope is aligned as closely as practicable to baseline conditions. The classification details are covered in **Section 6.2.3.**

39. Based on the initial NVC assessment, the enhanced peat survey was undertaken as follows:

- Likely active peat areas: Probes at 50 m spacing at boundary with possibly active peat/transition zones and further probes within the active peat zone for verification;
- Possibly active peat: 50 m peat probe and inspection grid; and
- Not active peat: 100 m peat probe and inspection grid.

40. The enhanced Phase 1 peat depth survey included a visual inspection of characteristics at or adjacent to each probe location, a photographic record, and the following data was recorded:

- Peat depth;
- Proximity to shallow (less than 0.3 m) or deep (greater than 0.3 m) surface water drainage;

76 Department of the Environment Northern Ireland (2009) accessed at: https://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/planning_policy_statement_18__renewable_energy.pdf

- Presence of common cottongrass (*Eriophorum angustifolium*) abundant, little or absent;
- Presence of harestail cottongrass (*Eriophorum vaginatum*) abundant, little or absent; and
- Presence of sphagnum (*Sphagnum sp.)* abundant, little or absent.

41. Furthermore, 30 dipwells have been installed across the Site to monitor near surface water levels within the peat onsite. The dipwells will be monitored at regular intervals under a variety of conditions and the results will inform the assessment of the hydrological characteristics of the peatland by sub area. Locations for the dip wells were selected on the basis of peat thickness, phase 1 habitats and presence of any notable surface drainage features.

42. Surveys undertaken to date will be utilised to inform design constraints which will be supplemented by Phase 2 peat probing as required by the design. The likely active peat areas identified in the initial stages of the assessment have contributed to the Indicative Developable Areas (shown on **Figure 2.1** of Appendix B) and are considered as a constraint based on their protection under PPS18. Given that existing infrastructure may be used / adapted as part of the design, Phase 2 peat probing could capture more detailed information required in the vicinity of the infrastructure.

11.3.1.2 Phase 2 Peat Study

43. Following design freeze, the Phase 2 peat study will be undertaken along the Development infrastructure at 50 m centres as well as at 5 - 10 m centres at each turbine location. This approach is in accordance with 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments' (Scottish Government, 2007) and 'Guidance on Developments on Peatland - Site Surveys' (Scottish Government, 2014).

44. The probing rationale during phase 2 may require to be more densely spaced in areas of potentially active peat and to allow for appropriate design and to inform any micro-siting requirements during the construction phase.

11.3.1.3 Peat Condition Assessment

45. If required, during Phase 2 peat probing, a selection of core sample locations will be taken to provide a full peat depth profile. This will be achieved by taking 50 cm cores from the surface layer through to the basal layer. A record of each core will be kept and will include, but not be limited to the following information:

- Photograph of each core;
- Depth of acrotelm layer;
- Degree of humification;
- Course and fine fibre content;
- Water content; and
- Information on the water table and the average soil pH level.

46. In the absence of published guidance specific to Northern Ireland, this approach is consistent with the document 'Good Practice During Windfarm Construction' produced by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency (SEPA), Forestry Commission Scotland and Historic Environment Scotland, (Scottish Renewables et al., 2015)[77].

11.3.1.4 Peat Slide Risk Assessment

47. Should significant quantities of peat be present within the Site, a peat slide risk assessment will be undertaken in accordance with Scottish Government guidance and 'Guidance on Developments on Peatland - Site Surveys' Scottish Government, 2014' along with full consultation with the relevant bodies.

48. The Peat Slide Risk Assessment will comprise of detailed analysis and reporting on the design freeze and will include a hazard and slope stability assessment and preliminary peat management.

49. In accordance with the 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments', Scottish Government (January 2007), the hazards existing on the Site will be ranked based on factors that influence stability, namely peat depth and slope gradient. In addition, potential receptors exposure to risk will be

77 Scottish Renewables, SNH, SEPA, Forestry Commission Scotland and Historic Environment Scotland (2015). Available online at: http://www.snh.gov.uk/docs/A1168678.pdf [Accessed on 02/08/2017]

established and hazard rankings applied across the Site, with management and mitigation measures recommended for an acceptable construction.

11.3.1.5 Peat Management Plan

50. An outline Peat Management Plan (PMP) will be prepared, if necessary, to inform the Council and statutory consultees of the proposed materials management methodologies to be employed during construction. The purpose of the PMP is to:

- Detail proposals for the management of peat and soils;
- Define the materials that will be excavated as a result of the Development, focusing specifically on the excavation of peat;
- Report detailed investigations into peat depths within the Site;
- Consider the potential impact of the Development on active peat and other sensitive habitats;
- Determine indicative volumes of excavated arisings, and proposals for depositing any surplus materials; and
- Detail management techniques for handling, storing and depositing peat for reinstatement.

51. In the absence of specific Northern Irish guidance associated with the excavation and management of peat and peaty soils, the PMP will be produced in accordance with Scottish Renewables and SEPA guidance on peat excavations and management and in line with relevant guidance including 'Good Practice during Windfarm Construction' published in 2010 by Scottish Renewables, SNH, SEPA and Forestry Commission and 'Developments on Peatlands, Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste' published in 2012 by Scottish Renewables and SEPA .

52. An assessment of excavated material based on probe data from surveys to allow a determination of likely volumes which will be created during the construction process. An assessment of peat excavation will be included to determine possible re-use of materials, to minimise excavation and to avoid sensitive areas of deep peat, should they exist. The output from this element will be a peat management statement which will inform various chapters within the ES including project design, ecology, hydrology and carbon savings assessments.

11.3.2 Baseline

11.3.2.1 Desk Study

53. The available online Geological Survey of Northern Ireland (GSNI)[78] information indicates the majority of the Site to comprise of glacial till with some areas of shallow rock expected. Peat is identified in the vicinity of the existing wooded areas to the east of the Site and should be anticipated in low lying topographic areas.

54. The underlying bedrock was indicated to belong to the Upper Basalt Formation comprising Paleocene aged Basalt. Beyond the Indicative Developable Area to the west, the rocks were recorded as sedimentary consisting mudstone, limestone, sandstone and chalk with occasional igneous dykes.

55. The geological assessors will liaise closely with the project ecology and hydrogeological/hydrology specialists to ensure that appropriate information is gathered to allow a comprehensive impact assessment to be completed.

11.3.2.2 Field Survey

56. The extent of probing and peat depths recorded from the Phase 1 surveys is shown on **Figure 11.1** in Appendix B. In summary, peat was generally recorded between 0 and 0.5 m to the west of the Site, with the exception of the northern area in the immediate vicinity of the woodlands, where it was more generally 1.0 m thick. To the east of the Site, peat depths varied between 0.5 m and > 1.5 m but was generally greater than 1.5 m with greatest thickness recorded towards the woodlands at the east of the Site. The findings were fairly consistent with the published GSNI mapping (see **Section 11.3.2.1**).

11.4 Scoped In Effects

57. The potential effects that are to be considered during the assessment are **:**

- Potential peat slide risk;

[78] Geological Survey of Northern Ireland, Available online at: http://mapapps2.bgs.ac.uk/GSNI_Geoindex/home.html [Accessed on 23/06/2017]

- Inform the assessment of active peatlands;
- Excavations and Management of peat and peaty soils; and
- Details of embedded mitigation and restoration relative to peatlands.

11.5 Scoped Out Effects

58. It is proposed that a full detailed peat assessment will be undertaken for the Development including peat slide risk and therefore no peat elements will be scoped out from the assessment.

11.6 Key Questions for Consultees

59. Key questions for Consultees are:

- Do Consultees agree with the proposed methodology and scope of the hydrology and hydrogeology assessment?
- Do Consultees agree with the elements proposed to be scoped out of the EIA?
- Are Consultees content with the proposed approach to the Phase 1 and Phase 2 peat probing surveys?
- Do the Council and NIEA or other consultees have any information that would be useful in the preparation of the geology, hydrology, hydrogeology and soil assessment?
- Do Consultees agree with the identified policy, guidance and methods to be used as the basis of assessment?

12 Tourism, Recreation and Socio-Economics

12.1 Introduction

1. The aim of the Tourism, Recreation and Socio-Economics assessment is to identify and evaluate the likely effects of the Development these resources. As there is a direct correlation between tourism and recreational use, these are discussed together whilst socio-economics is addressed separately.

2. The assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

3. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst case scenario than the decommissioning of the repowered wind turbines alone, should this be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

12.2 Tourism and Recreation

12.2.1 Suggested Methodology

4. Tourism and recreation effects will be considered based on the guidance from Guidelines for Environmental Impact Assessment[79] and a Handbook for EIA[80] and consider:

- Tourism and recreation;
- Land-use and ownership; and
- Public attitudes to wind farms.

5. An assessment of effects upon tourism and recreational resources will be undertaken, taking into account published data on visitor numbers and the value of tourism to the economy of the area. For this, a two tiered approach will be adopted. Firstly, an assessment of any potential significant effects on community receptor sites and tourism orientated attractions will be undertaken within a 10 km of the Site Boundary ('the Study Area'). Secondly, the assessment will consider any influential community and tourism receptors outside of the Study Area which have the potential to be significantly affected.

6. Consultation will take place with the following consultees to assess the effects to users of recreational routes:

- The Access Officer at the Council;
- Northern Ireland Tourist Board;
- Sustrans (Northern Ireland); and
- Outdoor Recreation Northern Ireland.

7. Various existing surveys and assessments of socio-economic and visitor profiles, land use and ownership, and public attitudes to wind farms will be collated to provide background information against which to assess the potential for significant effects.

12.3 Baseline and Key Sensitivities

12.3.1 Local Tourism and Recreation Receptors

8. Initial information on tourism and recreation has been gathered through a preliminary desk top search using available online resources to identify potential resources of interest. These are detailed in **Table 12.1.**

[79] Institute of Environmental Management and Assessment (IEMA) (2004) Guidelines for Environmental Impact Assessment (IEMA).
[80] SNH (2003) A Handbook for Environmental Impact Assessment, Appendix 5: Guide to Outdoor Access Assessment, SNH.

9. Should further receptors be identified within the Study Area, as part of the ongoing desk based assessment and consultation process these will be considered in terms of direct and indirect effects.

10. Indirect effects on any tourism or recreation receptor derive from the visual impact of the Development on that receptor, together with the receptors' sensitivity to change. Therefore, the findings of the LVIA, including the findings of the cumulative assessment will be used to inform the assessment of effects on the identified receptors.

Table 12.1: Local Tourism and Recreation Receptors

Tourism and Recreation Resource	Amenities	Location	Direct Effect	Indirect Effect
Cam Forest	Walking, Horse Riding	Adjacent to the north and east	Potential for direct effects should the existing site access (from Ringsend Road through Cam Forest) be utilised.	Potential visual effects on this receptor will be considered further as part of the EIA.
Gortnamoyach Forest (currently closed for public access for tree felling and harvesting)	Walking	3 km south-east of the Site	No direct effect	The ZTV (**Figure 5.4**) shows some limited visibility, however given the current felling activities new views may be opened up. Potential visual effects on this receptor will be considered further as part of the EIA.
Garvagh Forest	Walking	8 km south-east of the Site	No direct effect	Indirect significant effects are unlikely to arise as a result of the Development due to the distance and the lack of visibility as shown on the ZTV (**Figure 5.4**).
Roe Country Park	Outdoor activities including woodland walks, rock climbing, canoeing and fishing	6.3 km west of the Site	No direct effect	Indirect significant effects are unlikely to arise as a result of the Development due to the distance and the lack of visibility as shown on the ZTV (**Figure 5.4**).
Causeway Coast and Glens	Giant's Causeway, Carrick-a-Rede Rope bridge, Dunluce Castle, Old Bushmills Distillery and Mussenden Temple and Downhill Demesne.	Along northern coastline at a distance greater than 15 km from the Site	No direct effect	Indirect significant effects are unlikely to arise as a result of the Development due to the distance and the lack of visibility as shown on the ZTV (**Figure 5.4**).
The Ulster Way (Dungiven to Castlerock)	Walking route	A section of the route is located within the Site utilising the existing track (see **Figure 12.1** of Appendix B)	Requirement for temporary diversion during construction.	Potential visual effects on this receptor will be considered further as part of the EIA.

Tourism and Recreation Resource	Amenities	Location	Direct Effect	Indirect Effect
Highway to Health – Limavady circular route	Walking route	5.2 km north-west of the Site	No direct effect	Indirect significant effects are unlikely to arise as a result of the Development due to the distance and the lack of visibility as shown on the ZTV (**Figure 5.4**).
Boyd's Riverside Walk, Burnfoot	Walking route	6.8 km south-west of the Site	No direct effect	Indirect significant effects are unlikely to arise as a result of the Development due to the distance between it and the receptor and the riverside nature of the short walk.
Tannyranny, near Dungiven, a short walk to Benbradagh Mountain.	Walking route	6.0 km south of the Site	No direct effect	Indirect significant effects are unlikely to arise as a result of the Development due to the distance between it and the receptor. With cumulative visibility.
National Cycle Network routes and Links within 15 km radius	Cycling Route	6.2 km west of the Site	No direct effect	Indirect visual effects on NCN 93 between A6 in south and Binevenagh Mountain in the north. These will be considered further as part of the EIA

12.3.1.1 The Ulster Way

12. The Ulster Way passes through the Development and currently utilises the existing tracks associated with the Operational Rigged Hill Windfarm. When Rigged Hill Windfarm became operational in 1994, a section of the Ulster Way between Dungiven and Castlerock was diverted to make use of the tracks associated with the windfarm. **Figure 12.1** of Appendix B indicates the current and the historic route of the Ulster Way. In twenty years of operation, no incidents or accidents have been recorded by the Applicant to users of the Ulster Way within the Operational Rigged Hill Windfarm.

13. As part of the Development, it is the intention of the Applicant to temporarily divert this section of the Ulster Way in the interests of health and safety. The exact timescale of the decommissioning and construction phases are unknown, but it is likely that this will be for approximately twelve months. Once the Development is operational, the Ulster Way will be redirected back onto windfarm tracks. Consultation regarding the temporary diversion has been initiated with the Access Officer at the Council.

12.3.2 Scoped In Effects

14. It is therefore anticipated that the only direct effects upon tourism and recreation resources, as a result of the Development, relate to use of the Cam Forest and the Ulster Way. Therefore, only these receptors will be considered further for direct significant effects.

15. Most tourism and recreational receptors are located at a great distance from the Development. Indirect effects upon identified resources within 5 km, namely Cam Forest, Gortnamoyach Forest, and the Dungiven to Castlerock section of the Ulster Way, will be considered further as part of the EIA process.

16. Should further receptors be identified as part of the ongoing desk based assessment and consultation process, these will be considered further, and may be scoped out of further assessment, should the receptor receive no visibility of the Development or no significant visual effects.

17. Visual effects, including cumulative visual effects on more distance receptors such as the Tannyranny walking route to Benbradagh Mountain and the National Cycle Routes will be considered within the Landscape and Visual Impact Assessment.

12.3.3 Scoped Out Effects

18. All other direct effects upon tourism and recreation resources will be scoped out of the assessment at this stage.

19. Indirect significant effects upon tourism and recreation receptors are unlikely as a result of the Development due to the distance between it (beyond 5 km) and the identified receptors As such, the following receptors will be scoped out of the Tourism and Recreation assessment:

- Garvagh Forest;
- Roe Country Park;
- Causeway Coast and Glens;
- Highway to Health walking route;
- Boyd's Riverside Walk;
- Tannyranny walking route; and
- National Cycle Route 93.

12.4 Socio-Economics

20. A desktop socio-economic assessment will consider the potential direct and indirect effects of the Development. During the decommissioning / construction of the Development, local sourcing will be preferred where possible, creating direct economic benefits.

12.4.1 Baseline and Key Sensitivities

21. Socio-economic and census data indicates that there is a resident population of approximately 142,303 in the Causeway Coasts and Glens area[81]. Recent population growth in this area has been significantly lower than the Northern Ireland average, with an increase of 1.9% compared to 6.6%[82]. Currently, there is a 66% employment rate in the Causeway Coast and Glens area with 27% economically inactive. The largest employment sectors for the region includes distribution services, production and other services, with 12% of the population employed within the tourism trade[81]. In 2013, the energy sector in Northern Ireland employed 2,200 people and the number of energy sector enterprises has increased by 86% between 2010 and 2014[83].

22. The Operational Rigged Hill Windfarm is consented in perpetuity and repowering the site with more efficient machines, alongside potentially installing battery storage systems, will help drive down the overall cost of energy, bringing wider economic benefits to consumers.

23. Wind farms can have positive economic benefits on local communities by contributing to local benefit funds as well as providing employment and income by employing local contractors and employees. The Applicant currently employs a number of local companies involved in the maintenance of the Operational Rigged Hill Windfarm. In support of the decommissioning / construction phase the Applicant would typically hold 'Meet the Developer Days' whereby local firms are invited to meet the Applicant and lead contractors, and discuss opportunities to tender for work on the projects.

[81] Invest Northern Ireland (2016) *Causeway Coast & Glens Council Area Profile.* Available online at: https://secure.investni.com/static/library/invest-ni/documents/a-desktop/council-area-profile-causeway-coast-and-glens.pdf [Accessed on 05/07/2017]

[82] Causeway Coasts and Glens Borough Council (2015) Discussion Paper 1: Population and Growth. Available online at: https://www.causewaycoastandglens.gov.uk/uploads/general/Topic_Paper_1_-_Population_and_Growth.pdf [Accessed on 05/07/2017]

[83] Department of Enterprise, Trade and Investment (2016) *Energy in Northern Ireland 2016*. Available online at: https://www.economy-ni.gov.uk/sites/default/files/publications/deti/energy-northern-ireland-2016.pdf [Accessed on 05/07/2017]

1. During the proposed construction phase (and post completion), there will be further requirements for a wide range of services and possible job opportunities in a range of areas, such as turbine service and maintenance, waste management, grounds and roads maintenance, and the servicing and maintenance of operational buildings. The Applicant is committed to working with local companies in the procurement of such support.

2. The Applicant is keen to integrate themselves into the communities in which the windfarms operate. Previous community benefit funds have supported a wide range of worthwhile local initiatives, and the Applicant remains committed to working closely with the communities to maximise the opportunities for local businesses including through the provision of a community benefit package will be discussed and agreed with local community via the consultation process.

3. No significant negative economic effects will occur as a result of the Development, a Socio Economic Assessment setting out the positive economic effects of the Development, against the wider context of renewables, in Northern Ireland will be provided as an Appendix to the ES. This report will consider how the Development relates to sustaining and building on job opportunities in the renewables sector, the continued support and creation of a skills base, and consider the wider benefits of being at the forefront of emerging technology and innovation, and will focus on how the Development contributes to the local economy.

12.5 Scoped In Effects

4. Both direct and indirect effects upon socio-economics will be considered further as part of the EIA process.

12.6 Scoped Out Effects

5. No Aspects of the Socio Economics Assessment will be scoped out.

12.7 Key Questions for Consultees

6. Key questions for Consultees are:

- Are Consultees content with the proposal to temporarily re-divert the section of the Ulster Way during the decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development for health and safety reasons?
- Are Consultees aware of any additional key sensitive receptors that should be taken into account?
- Are Consultees aware of any additional relevant consultees not accounted for above?

13 Other Issues

1. A number of miscellaneous issues have been considered within this Section. It is not expected that there will be significant effects on these however, where required, they will be considered further as part of the EIA process with a view to scoping out many of the topics via consultation with the relevant consultees and stakeholders.

2. This section considers the following topics:

- Telecommunications and Utilities;
- Shadow Flicker and Reflectivity;
- Aviation and Radar;
- Human Health;
- Climate Change; and
- Waste.

3. The assessment will consider the potential effects of the Development during the following development stages:

- Dismantling and removal (decommissioning) of the Operational Rigged Hill Windfarm;
- Construction of the Development; and
- Operation of the site in perpetuity.

4. The decommissioning of the Operational Rigged Hill Windfarm and the construction of the Development is likely to occur partly in tandem and would be worse than if the two processes were to arise at different times. This represents a worst case assessment scenario than the decommissioning of the repowered wind turbines alone, should this be required. Therefore, the decommissioning of the Development is not considered further within this assessment.

13.1 Telecommunications, Television Reception and Utilities

5. Windfarms have the potential to interfere with electro-magnetic signals passing above ground and physically with existing infrastructure below ground. This can therefore potentially affect television reception, fixed telecommunication links and other utilities. To identify any existing infrastructure constraints, both consultation and a desk based study is underway. Consultation with relevant telecommunication and utilities providers is a routine part of windfarm development and consultees will include:

- Spectrum Licensing (OFCOM);
- Television and telecommunications providers as appropriate; and
- Water, gas and electricity utilities providers.

6. Other additional information obtained from consultation will be used to inform the layout design process.

7. Given the proximity to the telecoms masts at Temain Hill located to the south of the Site, early consultation to identify the existing telecoms constraints has been undertaken (see **Table 13.1**).

Table 13.1: Telecommunications Consultation Carried Out to Date

Consultee	Number of links	Comment
Northern Ireland Electricity	3	No response received to date
Police Service of Northern Ireland	2	Unlikely to have an impact, but will reassess once proposed turbine co-ordinates are known.
British Telecommunications (BT)	2	Require 100 m separation from blade tip to link path,
Airspeed Telecom	1	Provision of link to the Operational Rigged Hill Windfarm
Northern Ireland Water Ltd	8	No response received to date
EE Ltd	9	No response received to date
Arqiva Ltd	2	Not yet built, but likely to be operational in the next 12 months, Require a 100 m separation distance.
Joint Radio Company (JRC)	75	Exclusion zone of 500 m around most base sites, 500 m – 1 km separation required of all links. Further detailed consultation required.

8. From the information provided to date and as shown on **Figure 13.1** of Appendix B it is clear that the above links radiate from Temain Hill, with the majority radiating in an easterly direction. It is likely that the presence of the Operational Rigged Hill Windfarm has meant that as the telecoms industry has developed and links have been added to the masts at Temain Hill, no links have passed in close proximity to the existing turbines, with the exception of those serving the windfarm itself. The current links which serve the Operational Rigged Hill Windfarm will be decommissioned and new links will be constructed as required.

9. Further consultation will be carried out following confirmation of the candidate turbine and final layout. This will help ensure that the telecommunications links remain unaffected and that the requested separation distances will be adhered to. If this is not possible detailed consultation with the link provider will be carried out in order to provide effective mitigation for the link in question.

13.1.1 Scoped in Effects

10. Given the number of links in the vicinity of the Site and the importance of the telecommunications masts at Temain Hill, further assessment will be carried out as part of the EIA, on those links closest to the Site.

11. At the time of writing consultation with infrastructure providers had not been concluded, once all information from the providers has been collated it may be possible to scope out effects on television and other infrastructure.

13.1.2 Scoped Out Effects

12. All telecoms links beyond stated buffer distances will be scoped out of the assessment. The telecoms links serving the Operational Rigged Hill Windfarm will also be discounted and scoped out of the assessment.

13.2 Shadow Flicker and Reflectivity

13. In the UK, the shadow flicker effect has the potential to occur within 130 degrees either side of north relative to the turbine positions, as turbines do not cast long shadows on their southern side. It is also known that the effect is only likely to occur within 10 rotor diameters. Careful site selection, design and planning can help to avoid the possibility of shadow flicker in the first instance.

14. Guidance presented within the Best Practice Guidance to PPS18: Renewable Energy[84] describes shadow flicker as an effect that:

15. *"Under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off; the effect is known as 'shadow flicker'. It only occurs inside buildings where the flicker appears through a narrow window opening. A single window in a single building is likely to be affected for a few minutes at certain times of the day during short periods of the year. The likelihood of this occurring and the duration of such an effect depends upon:*

- *the direction of the residence relative to the turbine(s);*
- *the distance from the turbine(s);*
- *the turbine hub-height and rotor diameter;*
- *the time of year;*
- *the proportion of day-light hours in which the turbines operate;*
- *the frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon); and,*
- *the prevailing wind direction.*

16. *Problems caused by shadow flicker are rare. At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the site. Where shadow flicker could be a problem, developers should provide calculations to quantify the effect and where appropriate take measures to prevent or ameliorate the potential effect, such as by turning off a particular turbine at certain times.*

17. *Careful site selection, design and planning, and good use of relevant software, can help avoid the possibility of shadow flicker in the first instance. It is recommended that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day".*

18. The assessment of potential shadow flicker effects will be undertaken following the careful design of the Development and will follow the methodology described below.

19. Reflectivity is the potential for the sun to 'glint' off structures which, in the case of wind turbines, can be an intermittent glint when the turbines are rotating. This effect can be minimised by selecting a matt coating for the wind turbines which forms part of a standard specification for a modern turbine, designed to reduce the potential for reflection. It is therefore proposed to scope reflectivity out of the EIA at this stage.

13.2.1 Suggested Methodology

20. An assessment will be undertaken to determine whether or not there will be any impacts on surrounding properties. This will examine all properties which lie within 10 rotor diameters and 130 degrees either side of north from each turbine. Aerial imagery will then be reviewed to ascertain the orientation of the properties that fall within this area. Resoft Wind Farm, a computer modelling programme, will be used to model the potential effects at surrounding properties to quantify them. Should this initial assessment predict a likely significant effect then a full assessment will be included within the ES.

13.2.2 Scoped In Effects

21. Since the layout of the Development and the candidate turbine have not yet been finalised, it is proposed to carry out a Shadow Flicker assessment on any properties lying within ten rotor diameters of the turbine positions within 130 degrees of north with windows facing towards the Development.

22. Should no properties lie within ten rotor diameters, this will be confirmed within the ES.

13.2.3 Scoped Out Effects

23. All aspects of the assessment relating to reflectivity will be scoped out. The turbines will be painted a semi matt pale grey in accordance with best practice and in accordance will any planning conditions prescribed by the determining authority.

[84] Department of the Environment (2009) Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy. Available online at https://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/planning_policy_statement_18__renewable_energy__best_practice_guidance.pdf [Accessed on 27/06/2017]

13.3 Aviation and Radar

24. The operation of wind turbines has the potential to cause a variety of adverse effects on aviation during turbine operation. These include but are not limited to:

- Physical obstructions;
- Generation of unwanted returns on Primary Surveillance Radar (PSR); and
- Adverse effects on overall performance of Communications, Navigation and Surveillance (CNS) equipment.

25. The Site is approximately 55 km north-west of Belfast International Airport (BFS), over 75 km north-west of Belfast City Airport and 20 km east of City of Derry Airport, the three major airports in Northern Ireland. The turbines of the Operational Rigged Hill Windfarm are within radar line of sight of BFS's primary surveillance radar, and have been accommodated to date by both the airport and National Air Traffic Services En Route Plc (NATS) which also uses the BFS radar. The Operational Rigged Hill Windfarm is not in radar line of sight of Belfast City Airport's radar and the City of Derry Airport does not currently have radar facilities. The Site is beyond Derry City Airport's obstacle limitation surfaces. Following confirmation of the final Development layout and turbine type, consultation will be undertaken with these airports, however no objections are anticipated.

26. There are no active Royal Air Force (RAF) bases within 50 km of the Site. The Site is located within a little used Ministry of Defence (MoD) low flying area and the current turbines are being accommodated. The MoD will be consulted during planning but no objection is anticipated. Similarly, there are glider and parachuting sites within 10 km of the Site (at Ballarena and Movenis Airfields) but these have co-existed with the operational Rigged Hill Windfarm and therefore no objection is anticipated from these operators.

27. It is noted that the MoD may request some infra-red turbine lighting to be installed on the turbines as part of the Development. While it is possible that visible obstacle lighting may be requested by civil aviation stakeholders, this is not required by law as only obstacles beyond the immediate surrounds of an aerodrome (15 km) which are in excess of 150 m are required to be lit under the Air Navigation Order[85].

13.3.1 Scoped In Effects

28. It is anticipated that the Development will not cause a significant effect to aviation interests. The scope of any aviation impact assessment, if required, will be based on the outcome of consultation discussions with the relevant aviation consultees.

13.3.2 Scoped Out Effects

29. Until final turbine and layout information is available, it is not possible to fully scope out aviation effects.

13.4 Human Health

30. As per the EIA Regulations, a Human Health Impact Assessment (HHIA) should be included as part of the overall EIA process, with respect to the Development this section would simply draw together the findings of other assessments undertaken as part of the EIA process.

31. Limited Interactions with human health are possible, and consideration will be given to the findings of the following assessments:

- Traffic and Transportation;
- Noise;
- Residential Amenity;
- Shadow Flicker;
- Health and Safety at Work including best practice;
- Ice build-up on turbine blades and risk of ice throw;
- Lightning strike; and
- Risk of turbine failure and consideration of in built emergency procedures and best practice.

[85] The Air Navigation Order (2016) No. 765.

Properly designed and maintained wind turbines are a safe technology. The site design and inbuilt buffers from sensitive receptors will minimise any risk to human health resulting from the operation of the turbines. Risks associated with ice build-up and lightning strike are removed or reduced through inbuilt turbine mechanisms in modern machines, and as such can be scoped out at this stage.

13.4.1 Scoped In Effects

32. Effects on Traffic and Transportation; Noise; Residential Amenity; Shadow Flicker are assessed in full elsewhere within the ES. The Human Health assessment will draw together the findings of the individual assessments outlined above, arriving at an overall statement of significance.

13.4.2 Scoped Out Effects

33. All other potential interactions with Human Health, building in Health and Safety best practice, and a sensitive approach to layout design, resulting from ice, lightning strike and structural failures are unlikely to occur and as a result potentially significant effects are not anticipated. These have been scoped out of further assessment at this stage.

13.5 Climate Change

34. The aim of the Climate Change Impact Assessment (CCIA) section is to determine how the Development is likely to interact with a changing climate and whether any significant effects could arise. CCIA is a new form of environmental assessment required by the amended European Commission (EC) Directive 2014/52/EU[86] as transposed into the EIA Regulations.

35. As CCIA is a new category of assessment currently only provisional guidelines exist to standardise the process in the UK. The Institute of Environmental Management and Assessment (IEMA) published 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation[87]' in November 2015 with the intention of providing an updated and finalised version in 2017, once the Directive was transposed into UK law. As of early July 2017, this updated guidance has not yet been published. Accordingly, the proposed CCIA methodology was developed in line with the 2015 IEMA guidance and the text of the EU Directive and EC guidance[88] in order to establish a comprehensive assessment methodology. This methodology focuses on the following elements:

- Assessment of the Development's effects on climate change (calculation of carbon footprint based on best practice guidelines, *e.g.* Scottish Government Carbon Calculator Tool[89]) to include calculation of greenhouse gas emissions relating to construction, operation, decommissioning and the production of electricity;
- Assessment of the Development's vulnerabilities and resilience in the context of climate change by identifying appropriate climate change projections and climate change effects; and
- Assessment of the Development's effects upon identified environmental receptors in the context of the emerging baseline.

36. The most recent climate projection iteration, UKCP09[90], has identified the following climatic trends as a result of climate change:

- Increased temperature;
- Changes in the frequency, intensity and distribution of rainfall events (*e.g.* an increase in the contribution to winter rainfall from heavy precipitation events and decreases in summer rainfall);
- Increased windstorms; and
- Sea level rise.

[86] European Parliament and Council Directive 2014/52/EU amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment.
[87] Institute of Environmental Management and Assessment (2015) IEMA Environmental Impact Assessment guide to Climate Change Resilience and Adaptation.
[88] European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment. Available at http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf [Accessed 05/07/2017].
[89] Scottish Government, 2016, Calculating Carbon Savings from Wind Farms on Scottish Peatlands - A New Approach [Online] Available at: http://informatics.sepa.org.uk/CarbonCalculator/ (Accessed 05/07/2017)
[90] http://ukclimateprojections-ui.metoffice.gov.uk/ui/admin/login.php [Accessed on 12/07/2017]

13.5.1 Baseline

37. The Development is inherently designed to reduce adverse climate change effects by offsetting the production of carbon dioxide through use of renewable sources for generating electricity. The current baseline with respect to greenhouse gas emissions from existing methods of electricity generation (including the operational turbines onsite) will be identified using existing data from the Government, operational sites, and experience of other similar developments. This information will provide the baseline information against which to assess the contribution of the Development to reducing greenhouse gas emissions and identifying any potential for significant effects to arise.

38. Following initial peat proving surveys, it is noted that peat deposits have been recorded within the Site and, given the carbon storage properties of peat, consideration will be given to this within the CCIA.

13.5.2 Scoped In Effects

39. It is proposed that the assessment of the Development's effects on climate change will be scoped into the Environmental Impact Assessment (EIA), given the associated carbon reduction properties of windfarms and the potential for peat disturbance. This will be assessed using the Scottish Government's Carbon Calculator Tool[89]. Further guidance will also be sought from consultees as to what is expected within this assessment.

13.5.3 Scoped Out Effects

40. It is proposed that the Development's vulnerabilities and resilience to climate change can be scoped out of the EIA. None of the identified climate change trends listed in **Section 13.5** could affect the Development with the exception of increased windstorms. Breaking mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced then the turbines would be shut down. In addition, given the elevated location of the Development, flooding will not pose a significant risk to the operation of the windfarm nor will the repowering of a windfarm contribute to flooding elsewhere. Therefore, it is concluded that no significant effects will arise, as a result of the Development, and this topic can be scoped out.

13.6 Waste

41. At this stage, the exact quantities and types of waste are unknown. It is expected that they could include:

- Excavated material;
- Waste arising from the decommissioning of the Operational Rigged Hill Windfarm;
- Welfare facility waste;
- Packaging;
- Waste chemicals, fuels and oils;
- Waste metals;
- Waste water from dewatering;
- Waste water from cleaning activities; and
- General construction waste (paper, wood, etc.).

42. A Site Waste Management Plan (SWMP) will detail how waste streams are to be managed, following the Waste Hierarchy of prevention, reuse, recycle, recover and as a last resort, disposal to landfill.

43. All waste transported off the Site will be to the appropriate licenced receivers of such materials. The number of vehicles associated with the removal of waste material associated with decommissioning and construction will be considered within the ES Chapter 10: Access, Traffic and Transport analysis.

44. Given that operators receiving any waste materials resulting from the Development have been subject to their own consenting procedures and whose handling procedures of such waste materials have been deemed to be acceptable, there is no requirement for further consideration of waste to be undertaken, beyond the volume of any traffic generated by the decommissioning and construction phase resulting from its transportation.

13.6.1 Scoped In Effects

45. The number of vehicles associated with the removal of waste material generated during the decommissioning and construction phase will be considered within the ES Chapter 10: Access, Traffic and Transport.

13.6.2 Scoped Out Effects

46. It is not considered necessary for waste to be assessed further, due to the fact that all waste transported from the Site will be managed under licence. Therefore waste is scoped out from further assessment.

13.7 Key Questions for Consultees

47. Key questions for Consultees are:

- Do consultees agree that reflectivity can be scoped out of the EIA as unlikely to give rise to any significant environmental effects?
- Should no properties fall within ten rotor diameters and 130 degrees of north of the Development, are consultees content that shadow flicker effects can be scoped out of the EIA?
- Do Consultees agree with the suggested approach regarding Human Health?
- Are Consultees in agreement with the proposed CCIA methodology, in particular with the guidance and data sources referenced?
- Are Consultees in agreement that effects relating to waste, beyond those considered within ES Chapter 10: Access, Traffic and Transport, can be scoped out of the assessment?

14 Scoping Consultation

1. The Applicant is fully committed to a thorough engagement process aiming to ensure that communities are consulted and informed of developments during, and beyond, the EIA process on all their projects. This is achieved by a variety of methods as appropriate including public exhibitions, meetings and circulars. Public consultation will be incorporated into the iterative design process and recorded in appropriate sections of the ES.

2. The Applicant will prepare and submit a Pre-Application Consultation (PAC) Report as part of the planning application. This will set out what sort of consultation has been carried out including who has been consulted, methods used and how the applicant has responded to comments, including where these comments have influenced the design and layout of the Development .

3. Comments from Consultees are specifically invited on:

   - The proposed content of the ES;
   - Assessment methods;
   - Additional data sources; and
   - Additional consultees.

4. In terms of the proposed content of the ES, it should be emphasized that one of the aims of this Scoping Request is to scope out any issues which are known not to be significant from further consideration, and to highlight and focus on the main issues which should be assessed within the ES. This will be based on a three tier approach:

   - Not likely to have a significant effect as supported by current evidence;
   - Likelihood of significant effect to be confirmed following further assessment or when more information is available; and
   - Likely to have a significant effect.

5. All responses should be addressed to:

   Arcus Consultancy Services Ltd
   7th Floor
   145 St Vincent St
   Glasgow
   G2 5JF
   T. 0141 221 9997

6. Responses should also be directed to Causeway Coast and Glens Borough Council at:

   Development Management
   Causeway Coast and Glens Borough Council
   Cloonavin
   66 Portstewart Road
   Coleraine
   BT52 1EY

   planning@causewaycoastandglens.gov.uk

7. If you would like any more information prior to responding to this Scoping Request, please contact Arcus at the address above.

8. A list of consultees contacted at scoping is included in **Appendix A.**

Appendix A – List of Consultees

1. The organisations listed below will be consulted with the relevant information as part of the scoping process, although not all consultees will receive a complete copy of the Scoping Request.

Consultees to receive a copy of the Scoping Request:

- Causeway Coast and Glens Borough Council – Planning Department
- Causeway Coast and Glens Borough Council – Coast and Countryside;
- Causeway Coast and Glens Borough Council – Environmental Health
- Causeway Coast and Glens Borough Council – Biodiversity;
- Transport NI;
- Department for Infrastructure - Rivers Agency
- DAERA - Fisheries Division;
- DAERA - Forestry Division;
- DAERA - Countryside Management Branch;
- DAERA - Northern Ireland Environment Agency which includes;
  - DAERA - NIEA Water Management Unit;
  - DAERA - NIEA Waste Management;
  - DAERA - NIEA Natural Environment Division; and
  - DAERA - NIEA Countryside, Coast & Landscape Team.
- DCAL- Inland Fisheries Group;
- DfC- Historic Environment Division (HED) – Buildings & Monuments;
- Shared Environmental Services;
- Royal Society for the Protection of Birds;
- DfE - Geological Survey (NI);
- NI Water

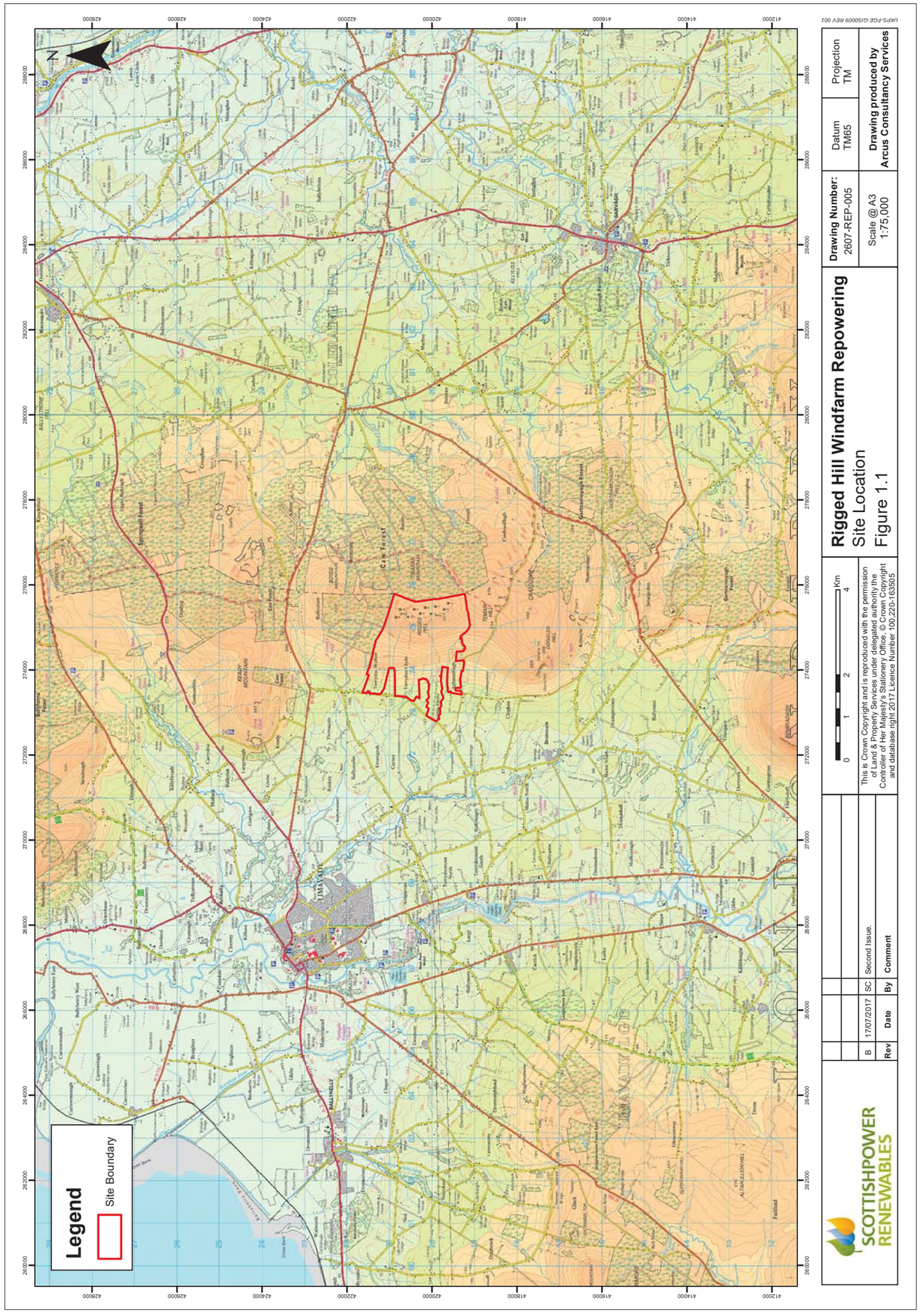
Consultees to be contacted during the assessment process, though not specifically during the scoping process:

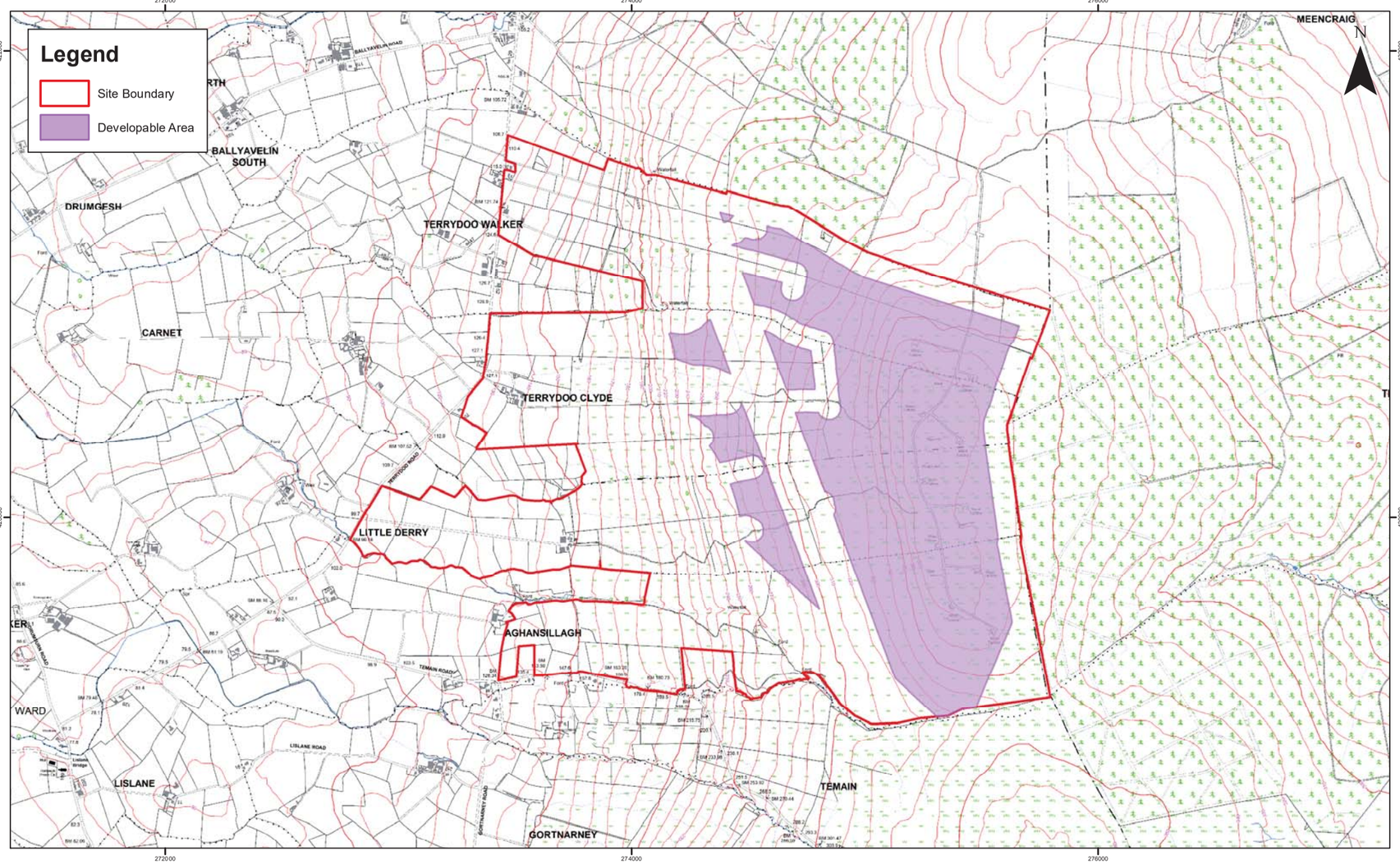
- Arqiva;
- Cable and Wireless Worldwide PLC
- Vodafone;
- Eircom UK Limited;
- NI Water – Windfarms;
- Police Service Northern Ireland;
- System Operator for Northern Ireland (SONI);
- CAA;
- Belfast International Airport;
- City of Derry Airport;
- City of Belfast Airport;
- Joint Radio Company;
- MOD (Defence Infrastructure Organisation);
- NATS;
- Spectrum Licensing (Ofcom);
- TAUWI (the Telecommunications Association of the UK Water Industry [via Atkins].

Appendix B – Figures

1. This Appendix contains the following figures:

- Figure 1.1: Site Location Plan;
- Figure 2.1: Indicative Developable Area;
- Figure 5.1: Landscape Study Area;
- Figure 5.2: Landscape Character and Blade Tip ZTV;
- Figure 5.3: Landscape Designations and Blade Tip ZTV;
- Figure 5.4: Visual Receptors and Blade Tip ZTV;
- Figure 5.5: Combined ZTV Rigged Hill Operational Turbines;
- Figure 5.6: Cumulative Windfarms;
- Figure 6.1: Natura 2000 Sites;
- Figure 6.2: Sites of National Importance;
- Figure 6.3: Preliminary Habitat Map;
- Figure 9.1: Cultural Heritage Assets;
- Figure 11.1: Interpolated Peat Depth;
- Figure 12.1: Ulster Way – Current and Former Route; and
- Figure 13.1: Telecommunications Links.





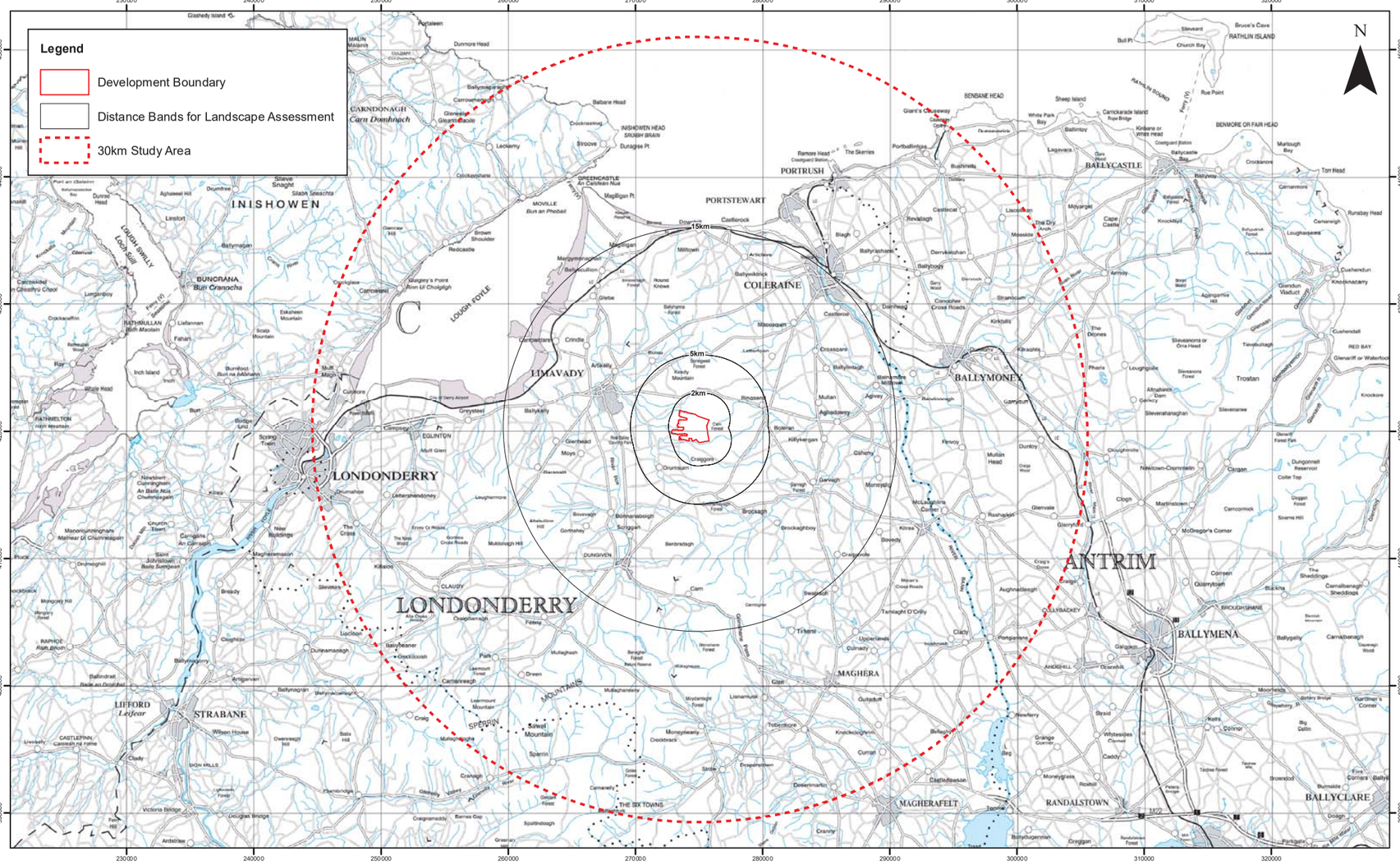
A	12/07/2017	SC	First Issue.	
Rev	Date	By	Comment	

0 125 250 500 m

Rigged Hill Windfarm Repowering
Indicative Developable Area
Figure 2.1

Drawing Number:	Datum	Projection
2607-REP-006	TM65	TM
Scale @ A3 1:15,000	Drawing produced by Arcus Consultancy Services	

UKPS-FGE-GIS0009 REV 001



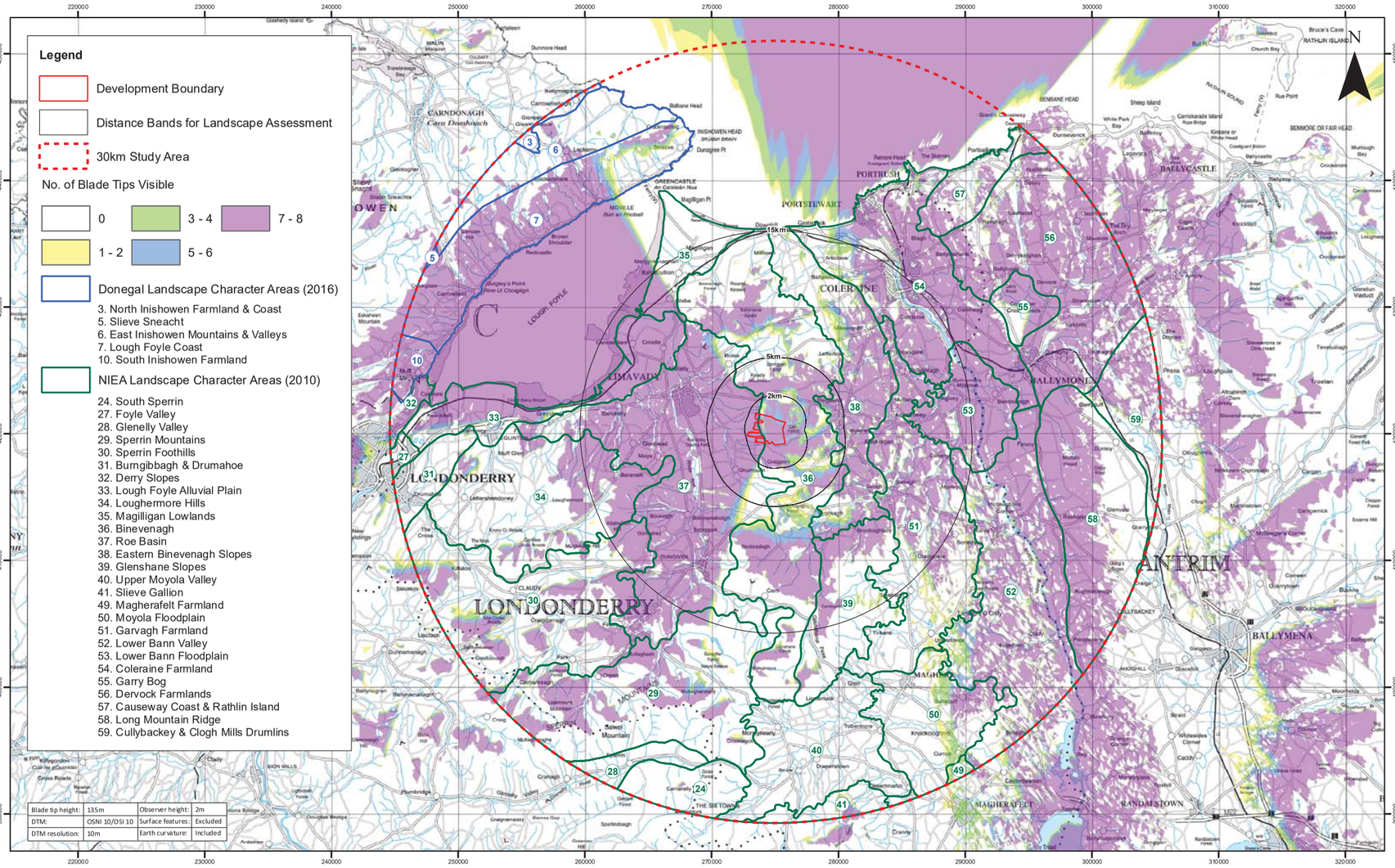
2	28/07/17	TH	Third Issue	
1	10/07/17	TH	Second Issue.	
0	30/06/17	TH	First Issue.	
Rev	Date	By	Comment	

0 3.75 7.5 15 Km

Rigged Hill Windfarm Repowering
Figure 5.1
Study Area

Drawing Number:	Datum	Projection
2606-REP-009	TM65	TM
Scale @ A3 1:275,000	Drawing produced by Optimised Environments Ltd.	

UKPS-FGE-GIS0009 REV 001



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2	28/07/17	TH	Third Issue
1	10/07/17	TH	Second Issue.
0	30/06/17	TH	First Issue.

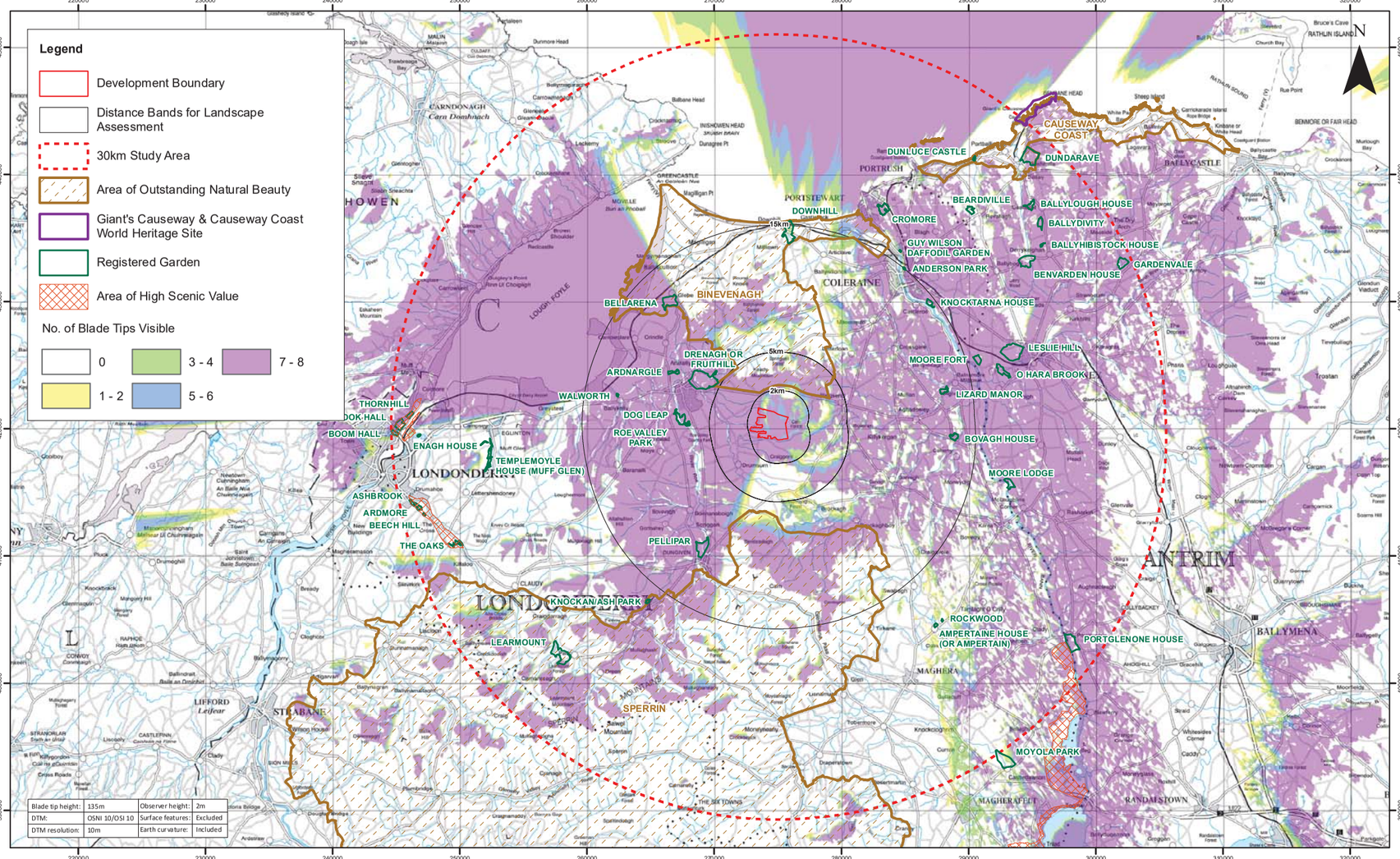
SCOTTISHPOWER RENEWABLES

0 3.75 7.5 15 Km

Rigged Hill Windfarm Repowering
Figure 5.2 - Landscape Character & Blade Tip ZTV

Drawing Number:	Datum	Projection
2606-REP-010	TM65	TM
Scale @ A3 1:275,000	Drawing produced by Optimised Environments Ltd.	

UKPS-FGE-GIS0009 REV 001



Rev	Date	By	Comment
2	28/07/17	TH	Third Issue
1	10/07/17	TH	Second Issue.
0	30/06/17	TH	First Issue.

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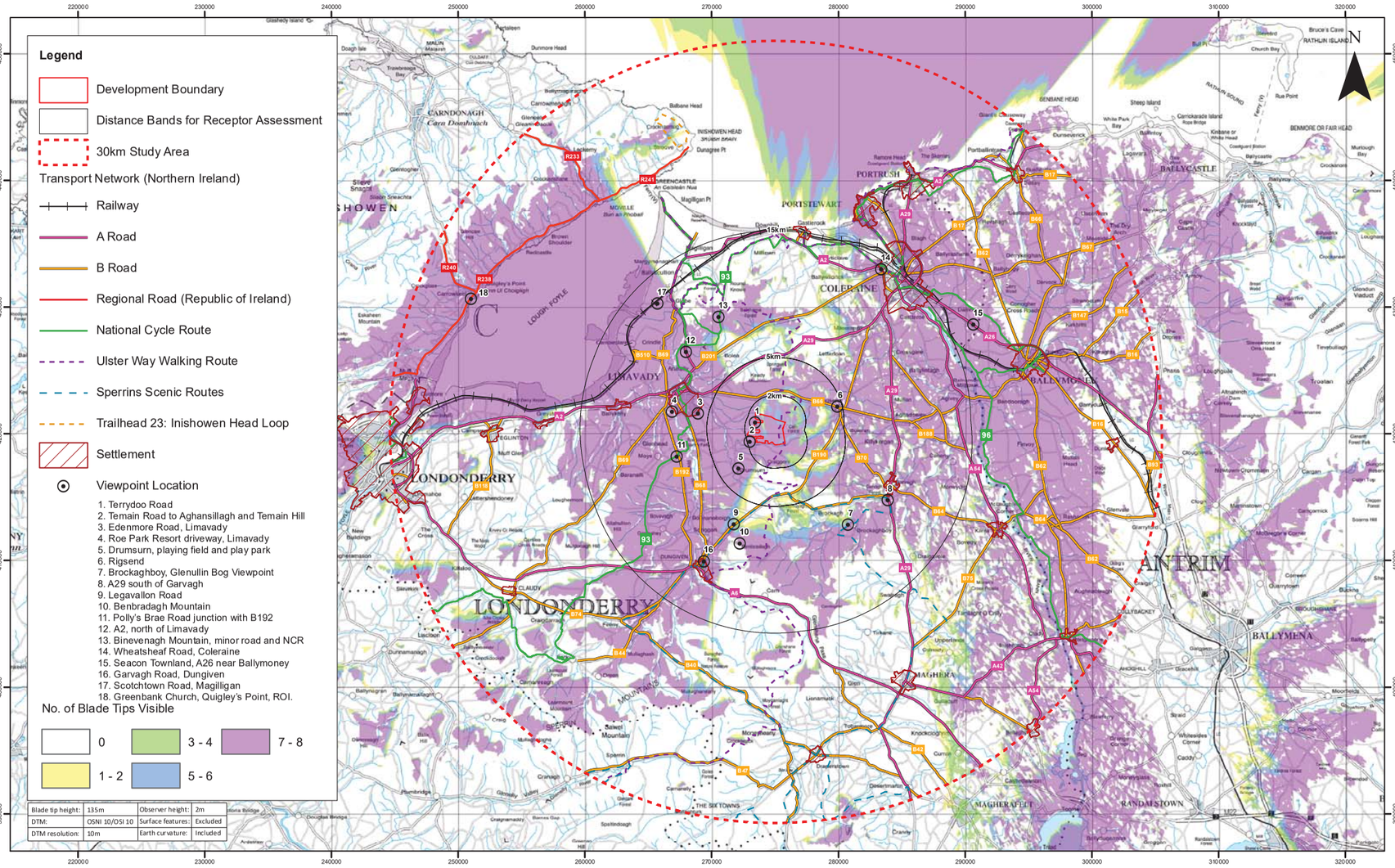
0 3.75 7.5 15 Km

Rigged Hill Windfarm Repowering
Figure 5.3 - Landscape Designations & Blade Tip ZTV

Drawing Number:	Datum	Projection
2606-REP-011	TM65	TM
Scale @ A3 1:275,000	Drawing produced by Optimised Environments Ltd.	

UKPS-FGE-GIS0009 REV 001



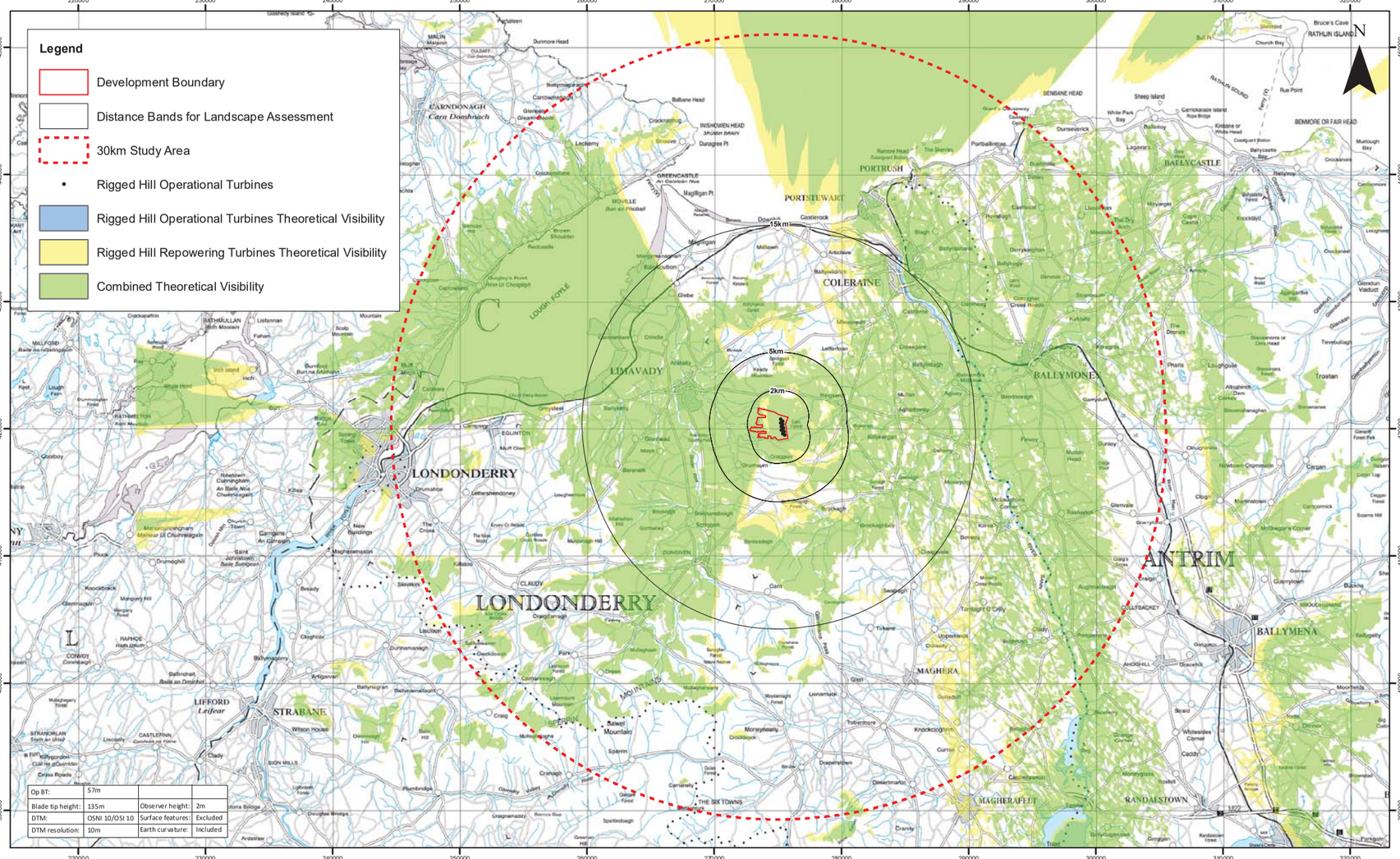
Rev	Date	By	Comment
2	28/07/17	TH	Third Issue
1	10/07/17	TH	Second Issue.
0	30/06/17	TH	First Issue.

0 3.75 7.5 15 Km

Rigged Hill Windfarm Repowering
Figure 5.4 - Visual Receptors & Blade Tip ZTV

Drawing Number:	Datum	Projection
2606-REP-012	TM65	TM
Scale @ A3 1:275,000	Drawing produced by Optimised Environments Ltd.	

UKPS-FGE-GIS0009 REV 001



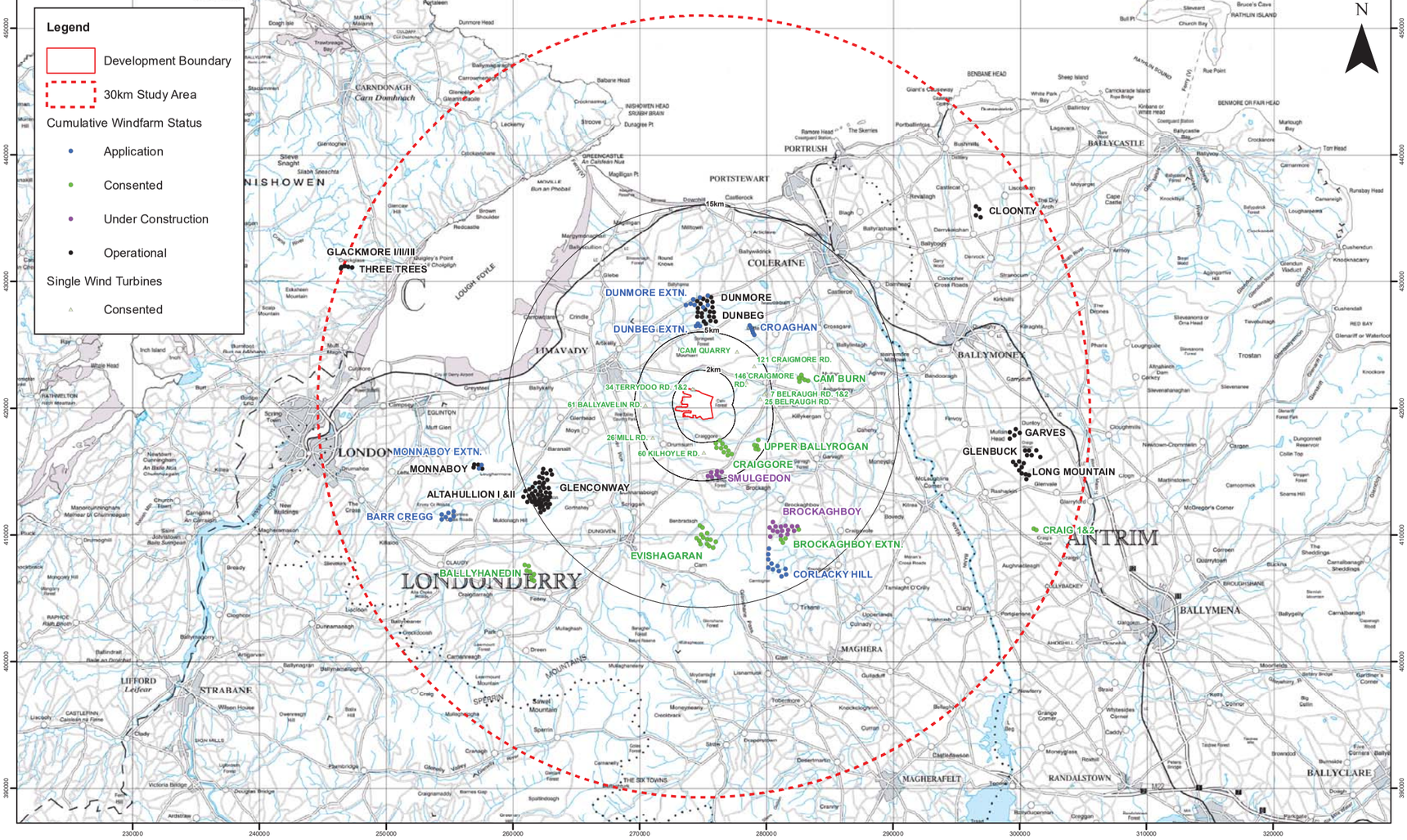
Rev	Date	By	Comment
1	28/07/17	TH	Second Issue.
0	18/07/17	TH	First Issue.

0 3.75 7.5 15 Km

Rigged Hill Windfarm Repowering
Figure 5.5 - Combined ZTV
Rigged Hill Operational Turbines

Drawing Number:	Datum	Projection
2606-REP-013	TM65	TM
Scale @ A3 1:275,000	Drawing produced by Optimised Environments Ltd.	

UKPS-FGE-GIS0009 REV 001



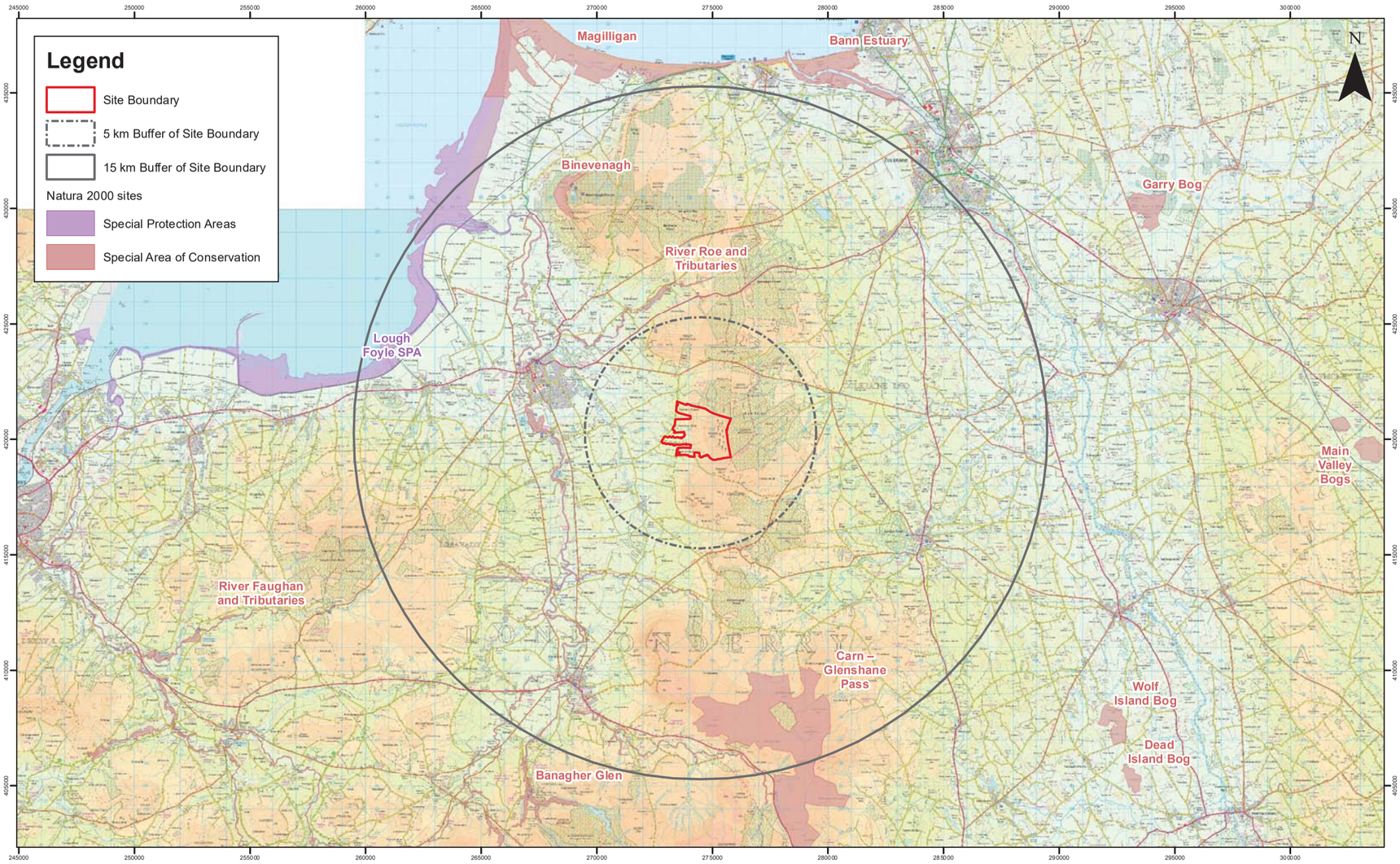
Rev	Date	By	Comment
2	28/07/17	TH	Third Issue
1	10/07/17	TH	Second Issue.
0	30/06/17	TH	First Issue.

0 3.75 7.5 15 Km

Rigged Hill Windfarm Repowering
Figure 5.6 - Cumulative Windfarms (OPEN, July 2017)

Drawing Number:	Datum	Projection
2606-REP-014	TM65	TM
Scale @ A3 1:275,000	Drawing produced by Optimised Environments Ltd.	

UKPS-FGE-GIS0009 REV 001



Rev	Date	By	Comment
A	07/07/2017	SC	First Issue.

0 2 4 8 Km

Rigged Hill Windfarm Repowering
Natura 2000 Sites
Figure 6.1

Drawing Number:	Datum	Projection
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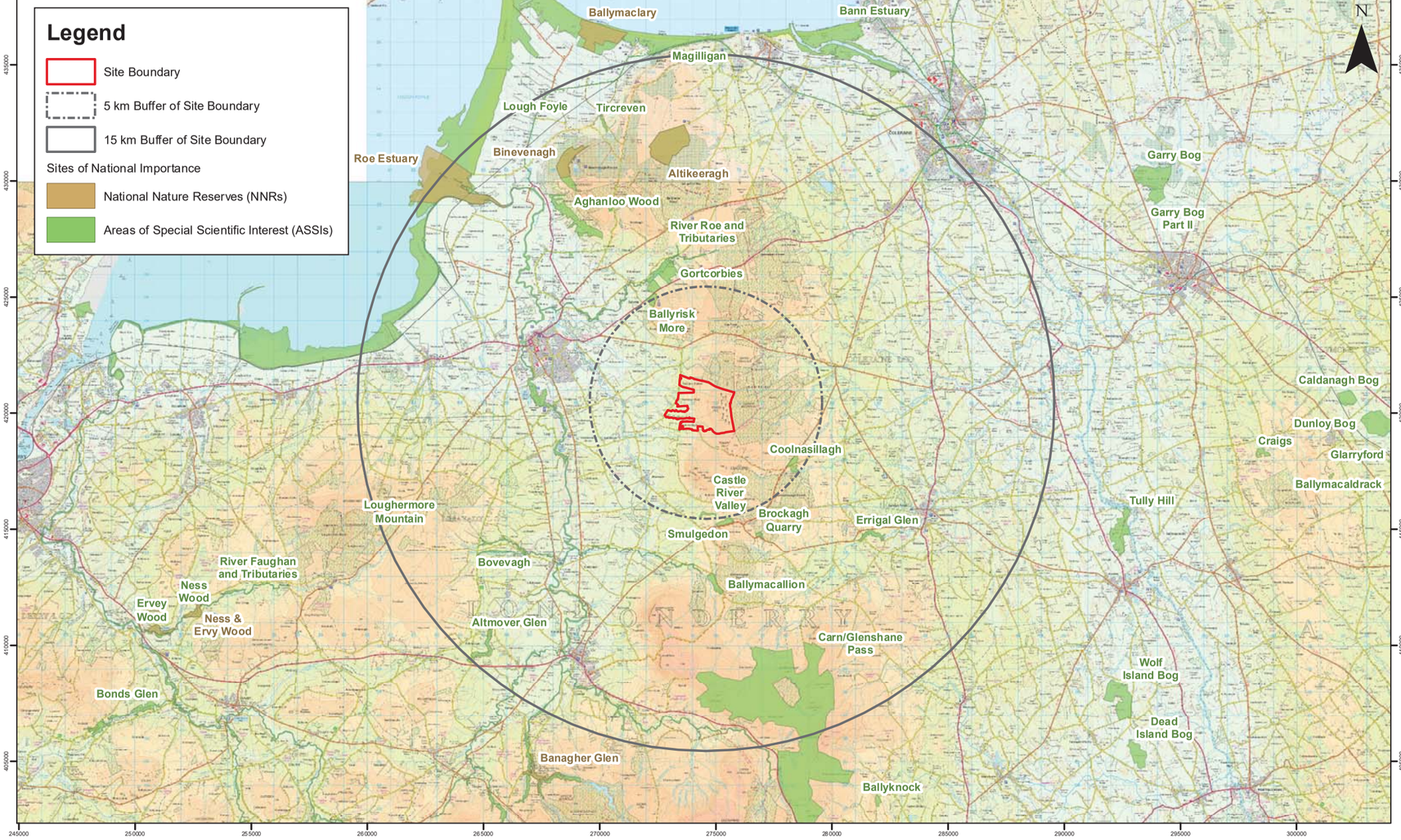
Scale @ A3 1:150,000	Drawing produced by Arcus Consultancy Services	

UKPS-FGE-GIS0009 REV 001



Rev	Date	By	Comment
A	07/07/2017	SC	First Issue.

0 2 4 8 Km

Rigged Hill Windfarm Repowering
Sites of National Importance
Figure 6.2

Drawing Number:	Datum	Projection
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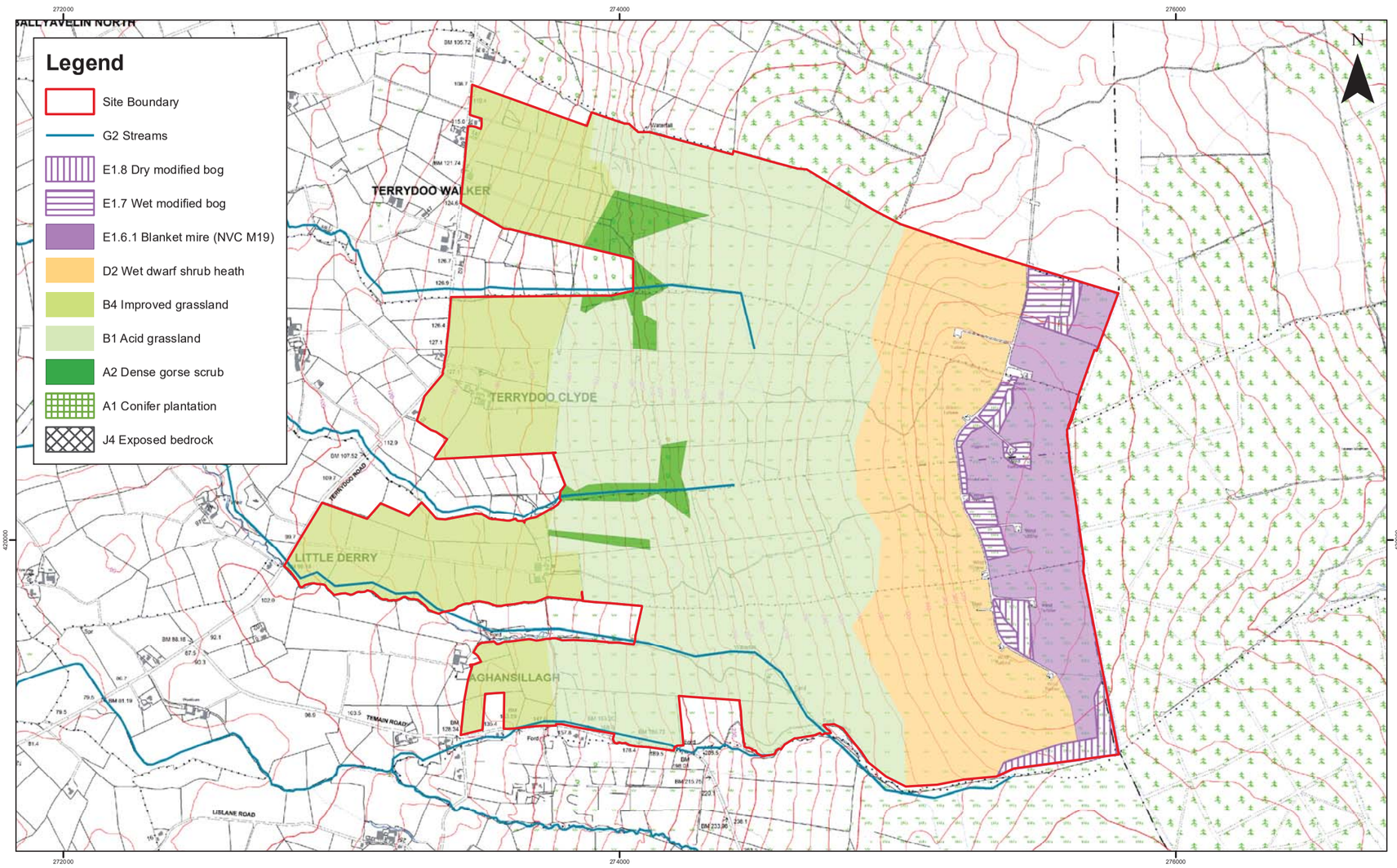
Scale @ A3 1:150,000	Drawing produced by Arcus Consultancy Services	



Rev	Date	By	Comment
A	07/07/2017	SC	First Issue.

0 125 250 500 m

Rigged Hill Windfarm Repowering
Preliminary Habitat Map
Figure 6.3

Drawing Number:	Datum	Projection
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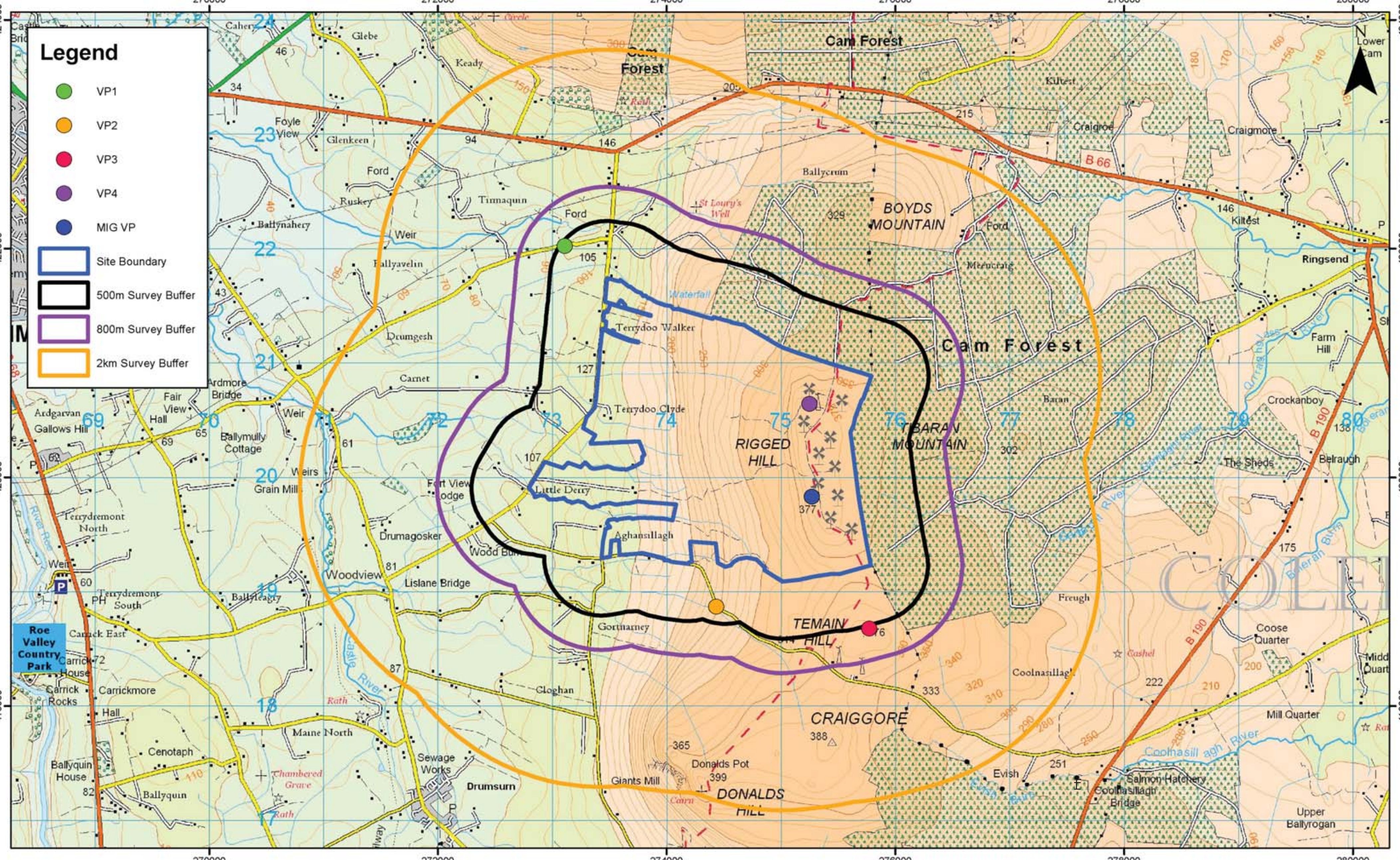
Scale @ A3 1:12,500	Drawing produced by Arcus Consultancy Services	



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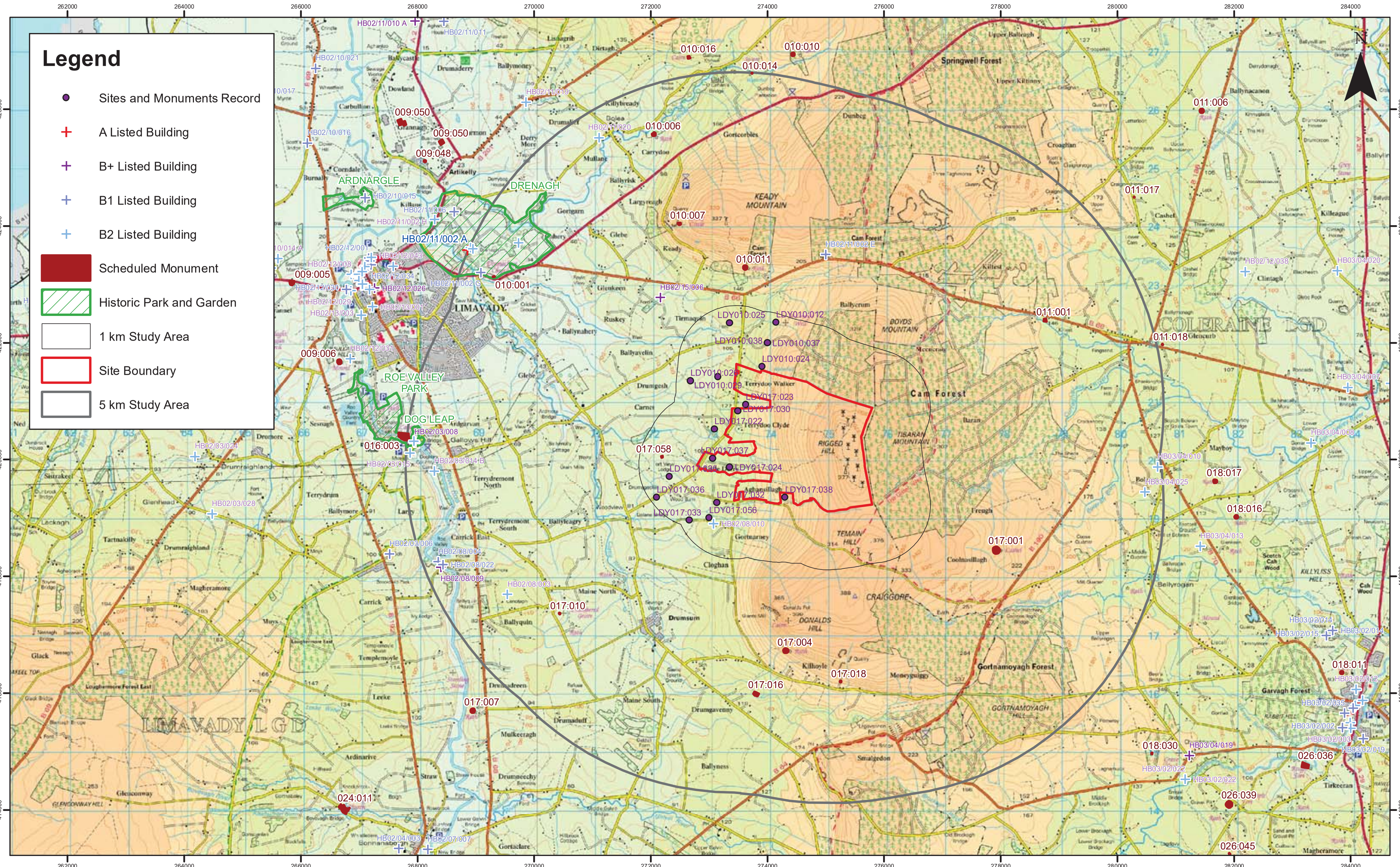
Rev	Date	By	Comment
A	11/07/17	AM	First Issue

0 0.5 1 2 Km

Rigged Hill Windfarm Repowering
Ornithology VPs and Survey Buffers
Figure 7.1

Drawing Number: 2607-REP-020	Datum TM65	Projection TM
Scale @ A3 1:30,000	Drawing produced by Birdsurveyors Ltd.	

UKPS-FGE-GIS0009 REV 001



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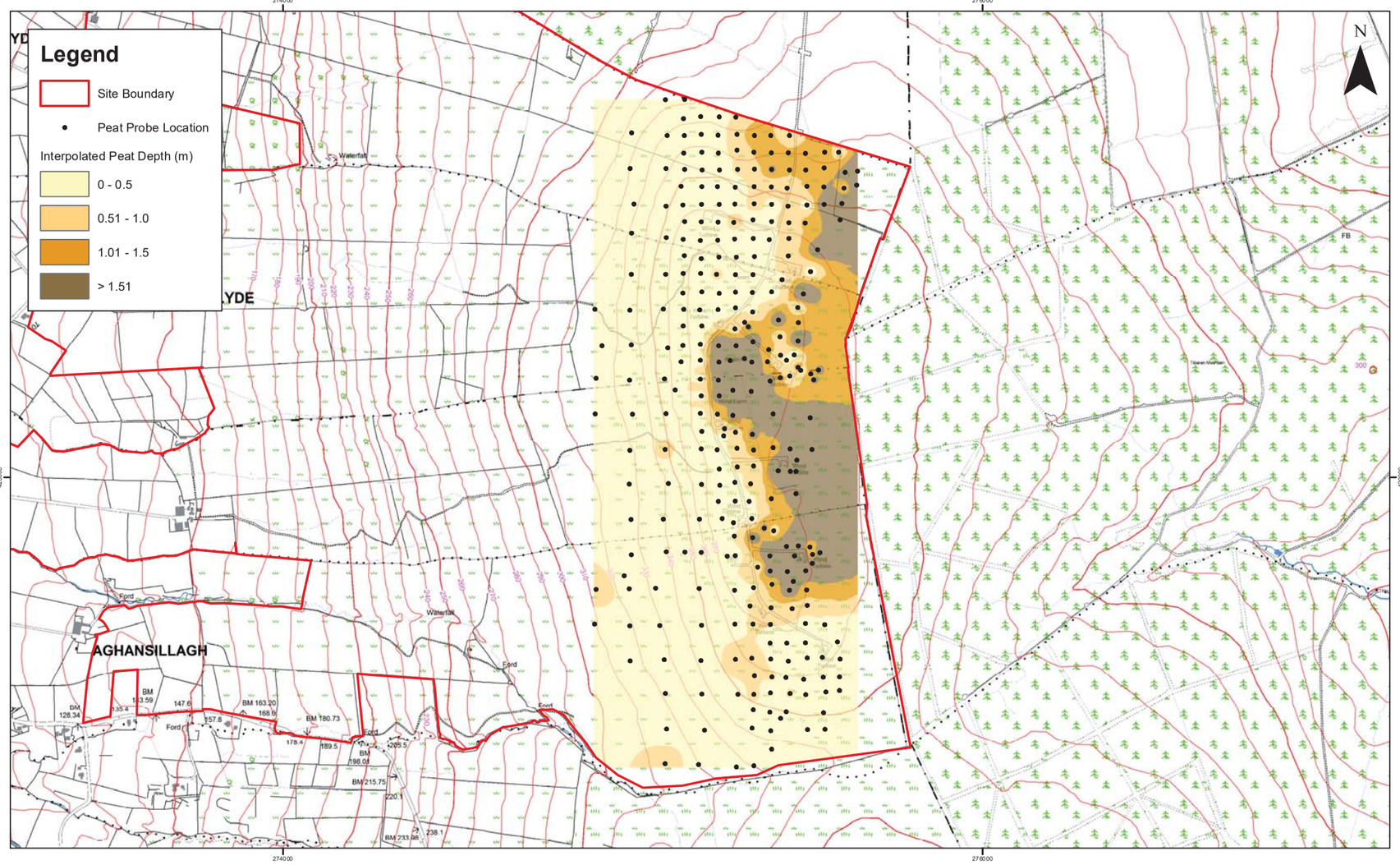
Rev	Date	By	Comment
A	26/06/2017	SC	First Issue.

0 0.5 1 2 Km

Rigged Hill Windfarm Repowering
Cultural Heritage Figure
Figure 9.1

Drawing Number: 2607-REP-008	Datum TM65	Projection TM
Scale @ A3 1:60,000	Drawing produced by Arcus Consultancy Services	

UKPS-FGE-GIS0009 REV 001



Rev	Date	By	Comment
A	12/07/2017	SC	First Issue.

0 125 250 500 m

Rigged Hill Windfarm Repowering
Interpolated Peat Depth
Figure 11.1

Drawing Number:	Datum	Projection
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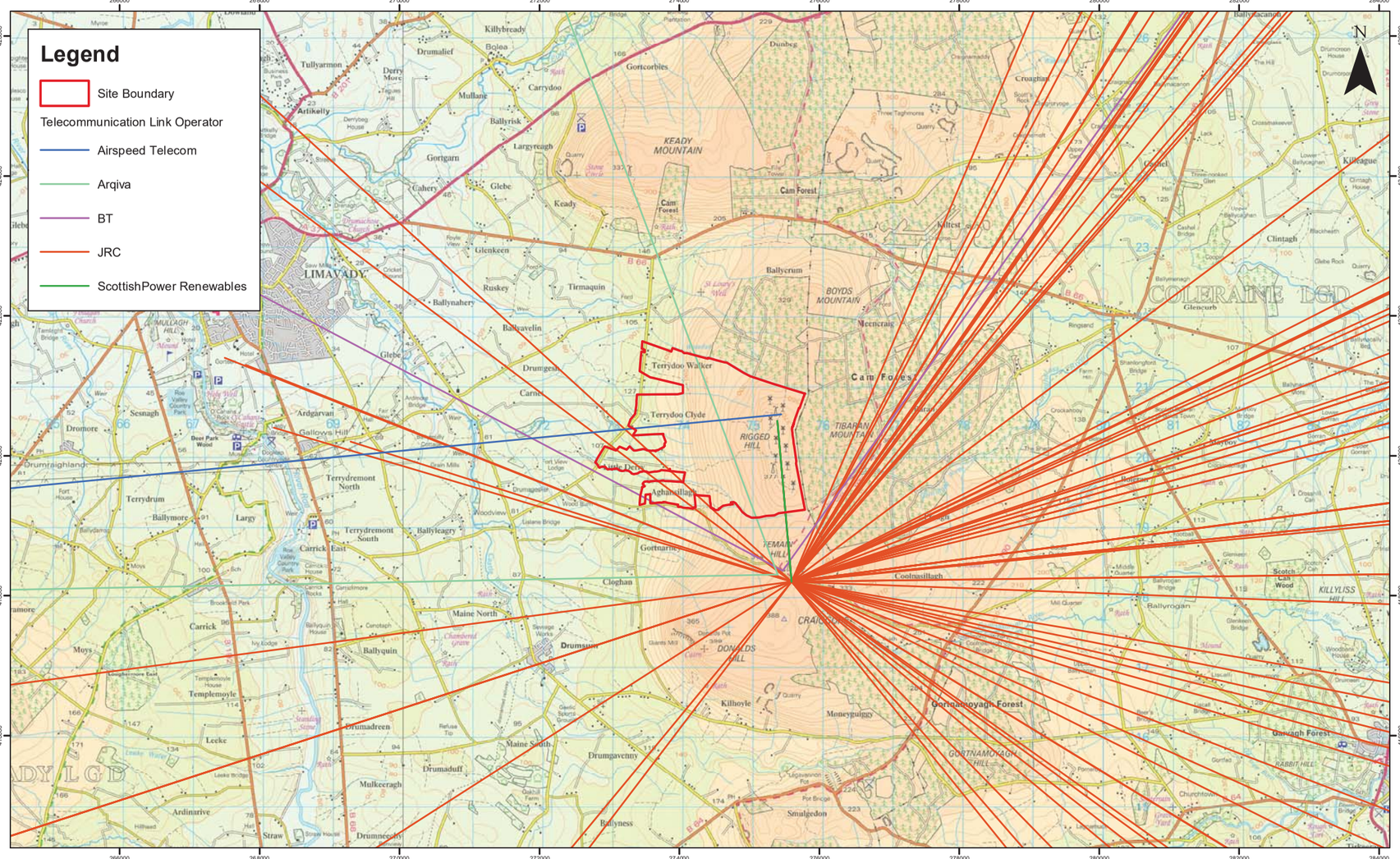
Scale @ A3 1:10,000	Drawing produced by Arcus Consultancy Services	

UKPS-FIGE-GIS0009 REV 001



Rev	Date	By	Comment
A	05/07/2017	SC	First Issue.

0 0.5 1 2 Km

Rigged Hill Windfarm Repowering
Telecommunication Links
Figure 13.1

Drawing Number:	Datum	Projection
2607-REP-005	TM65	TM
Scale @ A3 1:50,000	Drawing produced by Arcus Consultancy Services	

UKPS-FIGE-GIS0009 REV 001

Rigged Hill Windfarm Repowering Project Team
ScottishPower Renewables
9th Floor ScottishPower Headquarters
320 St Vincent Street
Glasgow
G2 5AD

riggedhillwindfarmrepower@scottishpower.com

www.scottishpowerrenewables.com

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Rigged Hill Windfarm Repowering

Technical Appendix A2.2: Scoping Opinion

Volume 3 – Technical Appendices
July 2019

www.scottishpowerrenewables.com

SCOTTISHPOWER RENEWABLES

Arcus Consultancy Services
7th Floor
145 St Vincent Street
Glasgow
G2 5JF

Causeway Coast & Glens Borough Council

Causeway Coast and Glens
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

Date: 26th January 2018
Your Ref:
Our Ref: LA01/2017/1107/DETEIA
(Please quote at all times)

Please Contact: Cathy McKeary

Contact Number 028 7034 7100

Dear Sir/Madam,

Location: Rigged Hill Windfarm, Limavady,

Proposal: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

Please refer to the previously provided consultation responses laying out the requirements for the submission of an Environmental Statement. Details of the other questions raised within your scoping document have been answered under LA01/2017/1094/PAD.

Yours faithfully,

[redacted]
For Head of Planning

Causeway Coast & Glens Borough Council

Arcus Consultancy Services Ltd
7th Floor
145 St. Vincent Street
Glasgow
G2 5JF

Causeway Coast and Glens
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

Date: 26th January 2018
Your Ref:
Our Ref: LA01/2017/1094/PAD
(Please quote at all times)

Please Contact: Cathy McKeary

Contact Number 028 7034 7100

Dear Sir/Madam,

Location: Rigged Hill Wind Farm, approx. 6.2km South-East of Limavady,
Proposal: Proposal to repower the existing Rigged Hill windfarm to compromise in the region of 8 new wind turbines up to a tip height of 135m (with up to a generating capacity of 3.6MW per turbine); crane hard-stands; new road access junction; upgrade of existing site access tracks and construction of new access track; temporary construction compound; sub-station; on site power collection system (turbine transformers and underground cables); permanent met mast; and battery storage

I refer to the above PAD request and would like to address the issues raised in the scoping document provided.

Section 4:

- The Council considers that the list of policies in Table 4.2 is comprehensive.
- The Council has no further policy or guidance to add and the applicant should refer to any guidance identified by the consultees in their responses.

- The transitional arrangement proposed are as those laid out in 1.10 – 1.13 of the SPPS and as such are acceptable. The Local Development Plan Strategy is scheduled for publication at earliest Autumn/Winter 2019 and is unlikely to be in effect before this application is determined.
- The Council is content with the proposal for scoping out further areas and would advise that this should be done directly with the relevant consultees under Regulation10 of the EIA Regulations (NI) 2017 prior to the submission of the ES.
- The Council does not agree that use of policy or guidance from another jurisdiction is appropriate. Any perceived absences in the policy and clarification required should be addressed with the Council or the relevant consultees.

Section 5

- The Council is content with the proposed study areas for the LVIA and cumulative LVIA.
- The Council is content with the aspects proposed to be scoped out of the LVIA.
- The Council is content with the proposed viewpoints but would advise that this does not preclude the case officer or the Council Committee from seeking additional viewpoints.
- It appears that the information proposed is adequate but again this does not preclude that this does not preclude the case officer or Consultees from seeking additional information.
- Council is content with the proposed cut-off date and would advise that there are no wind farm proposals going forward which need to be considered within this submission.

Section 6:

- The DAERA/NIEA consultation response provides the only comments that the Council has on this matter.

Section 7:

- The DAERA/NIEA consultation response provides the only comments that the Council has on this matter.

Section 8:

- The EHO consultation response provides the only comments that the Council has on this matter.

Section 9:

- The DAERA/NIEA consultation response provides the only comments that the Council has on this matter.

Section 10:

- The DfI Roads consultation response provides the only comments that the Council has on this matter.

Section 11:

- The DAERA/NIEA and GSNI consultation response provides the only comments that the Council has on this matter.

Section 12:

- Richard Gillen (Coast and Countryside Manager at Causeway Coast and Glens Borough Council) has advised that re-routing the section of the Ulster Way is acceptable subject to Forest Service agreement. If this is not forthcoming a further solution will be sought as closure of this part of the Ulster Way will not be acceptable.
- Any additional key sensitive receptors will have been identified by the consultees in their responses.
- The planning portal has identified the site as within the Loughs Agency consultation zone which is not on the list of consultees provided.

Section 13:

- The Council agrees that reflectivity can be scoped out of the EIA.
- The Council is content that should no properties fall within 10 rotor diameters and 130 degrees of North of the development then shadow flicker can be screened out.
- The Council is content with the suggested approach regarding Human Health.
- The Council is content with the proposed CCIA methodology, the guidance and data sources referenced.
- The Council is content that the effects relating to waste beyond those considered within ES Chapter 10 can be scoped out of the assessment.
- Please note that City of Derry Airport will be the only airport consulted under the statutory requirements (falls within 30km of airport) as per Schedule 3, part 1, 5 of the Planning (GDP) Order (NI) 2015.

Proposal of Application Notice

As I am sure you are aware, the 25MW capacity of the proposal causes it to fall within the major category and as such a Proposal of Application Notice is required at least 12 weeks prior to submission. The details of this process are laid out at https://www.planningni.gov.uk/index/advice/practice-notes/common-newpage-10.htm.

Committee Process

Also this application is major, in this Council it will automatically proceed to the Committee and cannot be delegated. Our Committee procedures are laid out at https://www.causewaycoastandglens.gov.uk/live/planning/planning-live.

Please note that a PAD is a separate and distinct advisory process. It does not bind the Council in making a formal decision at the regulatory stage, following public consultation with all interested parties. It is important to stress therefore that all PAD advice is given without prejudice to the formal consideration of your planning application. This is because other information may arise from consultations, including third party representations or policy changes during the regulatory determination process.

However, it is expected that any variations from the general advice offered at the PAD would be unusual.

Yours faithfully

[redacted]

For Head of Planning

Causeway Coast & Glens Borough Council

CONSULTEE COMMENTS

Application Reference:	LA01/2017/1107/DETEIA	**Council Ref:**	2647/17/JO'K
Date Consulted:	12 September 2017		
Location:	Rigged Will Windfarm, Limavady		
Proposed Development:	Scoping opinion request for the proposed repowering of Rigged Hill Windfarm		

Comments:

A scoping request entitled "Rigged Hill Repowering" and dated August 2017 has been received with regard to this proposal.

This proposal examines the feasibility of replacing the existing 10 Nordtank 500kW turbines on site with fewer, more efficient ones. The proposal also includes a battery storage unit. The proposed turbines will have a height of up to 135m. The scoping report considers the dismantling of the existing turbines, construction of the new ones and operational noise.

To the best of this department's knowledge no conditions were attached to the original proposal in terms of operational noise. There was therefore no background noise assessments carried out at that time. To determine background levels the applicant proposes subtraction of predicted noise levels due to the existing turbines from the measured background noise level as this is the most conservative means and most suitable methodology to ensure robust noise data.

This department concur with the approach suggested. Due consideration has been given to ETSU-R-97 and the Institute of Acoustics Good Practice Guide and Supplementary documentation. The methodology proposed would allow for the impact of this proposed windfarm to be assessed in the absence of any original data and with other developments in the area. It is stated that appropriate daytime fixed lower noise limits will be determined.

Smulgedon windfarm has been considered by the applicant as affecting the background noise assessment. There have been other windfarms proposed in the vicinity of Smulgedon (Craiggore and Ballyrogan which have been approved). There are several single turbines which have also been applied for/approved in the vicinity of Terrydoo Road and Temain Road and a proposal for a windfarm at Keady has been suggested.

Note - Any consultation response provided by this Department is based on currently available information relevant at the time of application and is limited to the supporting documentation submitted by the applicant/agent. This Department accepts no responsibility for any inaccuracies contained within the application documentation or associated communications available.

Upon receipt of the noise assessments this department will be in a position to provide further comment.

Date: 13 November 2017	Issued on behalf of the Head of Health and Built Environment.

Note - Any consultation response provided by this Department is based on currently available information relevant at the time of application and is limited to the supporting documentation submitted by the applicant/agent. This Department accepts no responsibility for any inaccuracies contained within the application documentation or associated communications available.

Environment, Marine & Fisheries Group
Marine & Fisheries Division

Department of
Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

www.planningni.gov.uk

Downshire Civic Centre
Ardglass Road
Downpatrick
Co Down
BT30 6GQ

Application Reference;
LA01/2017/1107/DETEIA

28th September 2017

PROPOSED REPOWERING OF RIGGED HILL WINDFARM, LIMAVADY

To whom it may concern,

DAERA Sea Fisheries Inspectorate has no issues or concerns with this project from an aquaculture/sea fisheries aspect but we would like to make the applicant aware that;

It is an offence under Article 47 of the Fisheries Act (NI) 1966 to cause pollution which is subsequently shown to have a deleterious effect on fish stocks.

All works near watercourses to be carried out in line with guidance as described in the Pollution Prevention Guidelines 5 (Works In, Near or Liable to Affect Watercourses).

Yours Sincerely,
Marine & Fisheries Division –Sea Fisheries Inspectorate

FOREST SERVICE

Planning Service
(Through Planning Portal)

Ref: LA01/2017/1107/DETEIA

Forest Service
Inishkeen House
Killyhevlin
Enniskillen BT74 4EJ
Phone 028 6634 3124
E-mail: john.griffin@daera-ni.gov.uk
www.daera-ni.gov.uk/forestry

6 October 2017

Dear Sir/ Madam

Re: Application Reference: LA01/2017/1107/DETEIA, Repowering of Rigged Hill Windfarm, Limavady.

Request for information relevant to the preparation of an environmental statement

I refer to your letter of notification indicating your intention to submit a planning application and environmental statement for the repowering of Rigged Hill Windfarm. The information below is based on the boundaries of the site as shown on the map titled Rigged Hill Windfarm Repowering Site Location (figure 1.1, Drawing Number 2607-REP-005 and dated 17/07/2017).

Location

Rigged Hill windfarm lies adjacent to Cam Forest which is managed by Forest Service.

Cam Forest:

Cam Forest is managed by Forest Service and lies adjacent to the northern and western boundaries of the existing windfarm. It largely consists of conifer plantation and the primary land use objective for much of the forest is timber production. Smaller areas are unplanted and are managed with the primary land use objective of recreation and social use or environmental protection and enhancement. The main tree species is Sitka spruce of varying age, although much of the area closest to the windfarm was planted in the 1960s. Small areas of lodgepole pine and broadleaves also occur within the forest. Some areas originally planted in the 1960s have already been harvested and replanted with conifers. The expected top height of the Sitka spruce at the time of harvesting would be approximately 25m.
Recently, hen harriers have bred successfully in the forest. The Irish hare and merlin have also been recorded.
The Ulster Way passes through this forest and through the eastern part of the windfarm site.

FOREST SERVICE

A natural reserve of 3 hectares consisting of lodgepole pine planted in 1963 lies adjacent to the southwest of the site boundary. This area will be managed by minimum intervention due to its potential value as a deadwood habitat.

The operational windfarm is currently accessed through Cam Forest. Forest Service notes the comments in the report with regard to possible changes to this access route.

Environmental and cultural features beyond the forest

Forest Service is aware of environmental and cultural features in the vicinity of the proposed site, but lying beyond the forest boundary and these are identified below.

There are several Sites and Monuments Records (SMRs) within the proposed site which are recorded as cropmarks and in addition there is a SMR (unconfirmed cashel) located just outside the southern boundary of the site.

Red grouse have also been recorded within the site.

Several watercourses occur within the site and flow into the River Roe and Tributaries which is designated as a Special Area of Conservation and an Area of Special Scientific Interest.

Some smaller woodlands occur on the Woodland Register[1] which are not managed by Forest Service. A 2 hectare woodland consisting of broadleaves at low stocking lies within the eastern boundary. A one hectare broadleaved woodland lies close to the western boundary of the site.

Forest regulation

Under Section 1 of the Forestry Act (Northern Ireland) 2010[2], the Forest Service has the general duty of promoting afforestation and sustainable forestry. Sustainable forest management standards are set out in The UK Forestry Standard, 4th edition (Forestry Commission 2017)[3] and set out the UK governments approach to sustainable forest management.

Forest Service is the lead government body for forest policy and is the competent authority for forestry in Northern Ireland. However, Forest Service does not have a regulatory role

[1] http://www.dardni.gov.uk/index/forestry/the-forest-industry/woodland-register.htm
[2] http://www.legislation.gov.uk/nia/2010/10/contents
[3] https://www.forestry.gov.uk/ukfs

An Agency within the Department of Agriculture and Rural Development
www.dardni.gov.uk
Tàlmhaíochta agus Forbartha Tuaithe
Fairms an Kintra Fordèrin
INVESTORS IN PEOPLE
AN AGENCY OF THE DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

FOREST SERVICE

where woodland removal lies within a planning application boundary.

In accordance with its deforestation policy, Forest Service requires developers to seek to avoid removal of woodland within the planning application area other than the area required for construction and ancillary works, unless there are overriding environmental considerations such as the opportunity to restore priority habitats[4].

A reference is made to the Forests and Water Guidelines on page 85 of the scoping request report. This has now been superseded and is now included within the new version of the UK Forestry Standard published earlier this year https://www.forestry.gov.uk/ukfs .

If you require clarification on any aspect of this letter, please contact me at the above address.

Yours sincerely,

John Griffin

Grants & Regulations Branch

[4] "Priority habitat restoration" – is defined as the conversion of forest plantation to those habitats which require conservation action because of their decline, rarity and importance. It includes restoration of open priority habitat such as blanket bog.

Causeway Coast & Glens Borough Council

Environ Health Causeway Coast Glens DC
Sheskburn House
7 Mary Street
Ballycastle
Co Antrim
BT54 6QH
N Ireland

Causeway Coast and Glens
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

Date: 30th October 2017
Your Ref:
Our Ref: LA01/2017/1107/DETEIA
(Please quote at all times)
Please Contact: Cathy McKeary

Contact Number

Dear Sir/Madam,

REGULATION 8(1)(a) and (b) EIA SCREENING OPINION UNDER PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS (NORTHERN IRELAND) 2017

Location: Rigged Hill Windfarm, Limavady,

Proposal: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

A pre-application request has duly been received seeking, under Regulation 8(1)(a) of the Planning (EIA) Regulations (NI) 2017, a determination as to whether a proposed development would or would not be EIA development and, under Regulation 8(1)(b), an opinion as to the scope and level of detail of the information to be provided in the Environmental Statement to be submitted with an EIA application.

Please provide an opinion as to whether the proposed development would or would not be EIA development and state clearly and precisely the reasons for such conclusions based on your area of expertise and the likely significant effect on the environment from the proposed development.

Please provide an opinion as to the information to be provided in the Environmental Statement to be submitted with an EIA application.

If there is insufficient information provided to enable you to respond to either request, please specify the particular points on which additional information is required.

Please provide your comments WITHIN 2 WEEKS from the date of this letter.

Yours faithfully

Causeway Coast and Glens Planning Manager

Department of
Enterprise, Trade
and Investment

Geological Survey of Northern Ireland

Colby House
Stranmillis Court
Belfast
BT9 5BF
Phone: 028 9038 8462
Fax: 028 9038 8461
E-mail: gsni@detini.gov.uk

GSNI Ref: E1/17/448
Client Ref: LA01/2017/1107/DETEIA
Date of Consultation: 12/09/2017
Planning Contact: Cathy McKeary

Proposed Development: Repowering of wind farm

Location: Rigged Hill, Limavady

Grid Reference (IrishTM65)
Easting: 274000 **Northing:** 420000

Consultation Type: Preapp

Comments:

I have made an initial inspection of our 1:10000 geological maps in respect to the proposed repowering of the wind farm at Rigged Hill, Co. Londonderry.

It is suggested that you consider all geological factors likely to impact upon the overall stability of the development and surrounding area. In particular, it is noted that a large proportion of the site is underlain by peat, covering high ground and moderate to steep slopes. Your Environmental Impact Assessment should therefore include a full Peat Slide Hazard Risk Assessment, following the recommendations made by Scottish Nature (Scottish Nature, 2007).

If you wish to enquire further about the availability of geological maps or additional geological information, please contact William Smyth at the GSNI office.

Best regards,

[redacted]

Sam Roberson

Quaternary Geologist

Date: 02/10/2017

References:

Scottish Nature, **2006**, *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments*, Scottish Executive, Edinburgh, 72 pp.

Department for
Communities
www.communities-ni.gov.uk

Historic Environment Division
Causeway Exchange
1-7 Bedford Street
Belfast
BT2 7EG

Tel: 028 9082 3100
Email:
HEDPlanning.General@communities-ni.gov.uk

Date:29 September 2017

Dear Sir/Madam

Planning Application Ref.:	LA01/2017/1107/DETEIA
Location:	Rigged Hill Windfarm Limavady
Proposal:	Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015

Thank you for your consultation on the above application, received by DfC on 12/09/2017

Historic Environment Division (HED) has reviewed the details of the application and provides summary comments as follows:

Archaeology and Built Heritage
HED Historic Buildings consider that this application is sufficiently removed from the listed building to have no effect. HED Historic Monuments: Therefore, should it be determined that an Environmental Impact Assessment (EIA) is required then Historic Environment Division: Historic Monuments (HED: HM) would require an archaeological section within it. However, if it is determined that an EIA is not necessary then HED: HM would still require an Archaeological Impact Assessment (AIA) with a particular focus on the archaeological features of the immediate area.

Historic Environment Division (HED) has reviewed the details of the application and provides summary comments as follows:

Should you seek further clarification on any of the issues raised in this response, please do not hesitate to contact the HED Planning Team.

Kind Regards

Historic Environment Division

Archaeology & Built Heritage

Section Reference SM11/1 LDY 017: 024, 030, 038

Considerations

There is a number of archaeological sites and monuments recorded within the environs of the application site with particular foci of settlement activity dating to the Bronze Age and medieval period. Several archaeological sites are located within the application area: possible crop mark sites at LDY017:030, LDY017:037, LDY017:024 and a possible cashel at LDY 017:038 – all identified through aerial photography.

Historic Environment Division: Historic Monuments (HED: HM) has reviewed the scoping request and notes the Key Questions for Consultees in Section 9.7. HED: HM will provide a more comprehensive response once the assessment has been completed and submitted with the full planning application. HED: HM would like to emphasise that the 5km study area proposed by the applicant should be considered as a minimum distance threshold only, especially with regard to the impact of the proposed development upon scheduled and Stare Care sites. HED: HM would also highlight the need for a comprehensive assessment of the cumulative impact of windfarms in the area.

Given the known archaeology within the immediate area, there is the potential for previously unrecorded below-ground archaeological remains to be found during ground works for the proposal. Therefore, should it be determined that an Environmental Impact Assessment (EIA) is required then Historic Environment Division: Historic Monuments (HED: HM) would require an archaeological section within it. However, if it is determined that an EIA is not necessary then HED: HM would still require an Archaeological Impact Assessment (AIA) with a particular focus on the archaeological features of the immediate area. The AIA should be prepared by a professional archaeologist/archaeological consultancy and include:

1. A detailed overview of the likely impact of development on the archaeological sites and monuments and related historic environment features located close to the proposed development. This should include a desktop survey of the area, making use of any relevant information held in the Monuments and Buildings Record, historic maps of the area, information of archaeological sites, monuments, and artefacts held by the Ulster Museum, consultation of the excavation database and any other relevant sources. There should be a field inspection of the application site to identify any other previously unrecorded, upstanding archaeological remains, and to identify areas of highest archaeological potential.

2. An assessment of the potential impacts of this development on those known archaeological sites and monuments within its environs, either Scheduled or in State Care, and monuments that are of local importance. Scheduled and State Care monuments are protected under the Historic Monuments and Archaeological Objects (Northern Ireland) Order and also afforded protection under the provisions of Planning Policy Statement 6 – Planning, Archaeology and the Built Heritage, Policy BH1. Any development within the immediate vicinity of a Scheduled or State Care monument that may affect it or its setting would not be

permitted under **PPS 6 Policy BH1**. Monuments that are of local significance such and associated below-ground remains are protected under **PPS 6 Policy BH2**.

3. A mitigation strategy, to include an initial geophysical survey of the site, to identify any previously unrecorded archaeological remains within the development area. The mitigation strategy should include options for preservation of archaeological remains *in-situ*, or for the appropriate identification and excavation recording of remains where preservation *in-situ* cannot be achieved. The mitigation strategy should also make provisions for works that may be necessary after the field work is completed. This may include post-excavation processing and analysis of the archaeological material retrieved, preparation of specialist reports etc. and the preparation of a final report. All this should be in line with PPS 6 Policy guidelines.

Archaeology & Built Heritage

Section Reference: HB02/08/010

EIA Determination

Considerations

Historic Environment Division(HED) has been consulted under Regulation 7(1)(a) of the Planning (EIA) Regulations (NI) 2015 to consider whether the planning application for Rigged Hill Windfarm Limavady Co Londonderry would/would not be EIA development.

HB02/08/010 21 Lislane Road Gortnahay Limavady a Grade B2 listed building of special architectural or historic interest as set out in Section 80 and protected under the Planning Act (NI) 2011 is in the vicinity of the application site.

HED has considered the potential effects of the proposal on the listed building and on the basis of the information provided advise:

- HED Historic Buildings consider that this application is sufficiently removed from the listed building to have no effect.

Planning ref: **LA01/2017/1107/DETEIA**
Date HED response: 28-Sep-17

DfC
Department for Communities
www.communities-ni.gov.uk

Arcus Consultancy Services
7th Floor
145 St Vincent Street
Glasgow
G2 5JF

Causeway Coast & Glens Borough Council

Causeway Coast and Glens
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

Date: 26th January 2018
Your Ref:
Our Ref: LA01/2017/1107/DETEIA
(Please quote at all times)

Please Contact: Cathy McKeary

Contact Number 028 7034 7100

Dear Sir/Madam,

Location: Rigged Hill Windfarm, Limavady,

Proposal: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

Please refer to the previously provided consultation responses laying out the requirements for the submission of an Environmental Statement. Details of the other questions raised within your scoping document have been answered under LA01/2017/1094/PAD.

Yours faithfully,

[redacted]
For Head of Planning

Infrastructure Planning
Westland House
Old Westland Road
Belfast
BT41 6TE

Tel: 028 90354813 Ext 20646
www.niwater.com

northern ireland water

Causeway Coast and Glens
Local Planning Office
County Hall
Castlerock Road
Coleraine
BT51 3HS

Your Ref:
LA01/2017/1107/DETEIA

Our Ref:

Date: 15 October 2017

Dear Sir / Madam.

PLANNING CONSULTATION REFERENCE – LA01/2017/1107/DETEIA

NI Water note that the applicant proposes to decommission the existing ten wind turbines and replace them with approximately seven new larger and more efficient machines.

If the seven replacement turbines are erected at new locations within the existing site they could conflict with the existing NI Water Telemetry Communication Network.

Causeway Coast and Glens Planning Office will therefore be required to consult with NI Water Windfarms in order to check if the proposed relocated turbines conflict with NI Water Telemetry Communication Network.

Yours faithfully

Alan Moore
Infrastructure Planning

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

Dfl Rivers Planning Advisory Unit

44 Seagoe Industrial Estate
CRAIGAVON
Co. Armagh
BT63 5QE
Tel: 028 3839 9118

Cathy McKeary
Causeway Coast and Glens Borough Council
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

Your Ref:
LA01/2017/1107/DETEIA
Our Ref: IN1-17-40299

Date: 10/1/2018

Dear Sir / Madam,

Re: Repowering of Rigged Hill Windfarm, Limavady - LA01/2017/1107/DETEIA

Thank you for your consultation dated 16th November 2017 regarding the above proposal. Dfl Rivers have assessed the application and our comments are as follows:-

Dfl Rivers remit is limited to commenting on flood risk and drainage matters in accordance with planning Policy Statement 15 Planning and Flood Risk (PPS 15).

Policy FLD 1 Development in Fluvial (River) and Coastal Flood Plains
The Strategic Flood Map (NI) indicates that the development **does not** lie within the 1 in 100 year fluvial flood plain.

PPS15 Policy FLD 2 Protection of Flood Defence and Drainage Infrastructure
This site is affected by various watercourses that are undesignated in accordance with the Drainage (Northern Ireland) Order 1973.
Under 6.32 of the policy a 5m maintenance strip is required. It should be marked up on a drawing and be protected from impediments (including tree planting, hedges, permanent fencing and sheds), land raising or future unapproved development by way of a planning condition. Clear access and egress should be provided at all times.

The applicant should be made aware of their obligations to maintain the watercourse under Schedule 5 of the Drainage Order Northern Ireland 1973.

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

PPS15 Policy FLD 3 Development and Surface Water (Pluvial) Flood Risk Outside Flood Plains
Due to the size and nature of the development FLD3 of PPS15 applies. The application has not been accompanied by a Drainage Assessment therefore potential flood risk has not been adequately dealt with by the applicant. Dfl Rivers would recommend that a Drainage Assessment is carried out for our consideration.

The applicant should refer to paragraph D17 and D18 of PPS 15.
In carrying out the drainage assessment the applicant should acquire from the relevant authority evidence that the proposed storm water run-off from the site can be safely discharged. If the proposal is to discharge into a watercourse then an application should be made to the local Dfl Rivers office for consent to discharge storm water under Schedule 6 of the Drainage (NI) Order 1973.

PPS15 Policy FLD 4 Artificial Modification of Watercourses
Under FLD 4 of Planning Policy Statement 15, Artificial modification of a watercourse is normally not permitted unless it is necessary to provide access to a development site or for engineering reasons. This is a matter for Planning NI.
Any culverting approved by Planning Service will also be subject to approval from Dfl Rivers under Schedule 6 of the Drainage Order 1973. These two approvals do not go hand in hand.

PPS15 Policy FLD 5 Development in Proximity to Reservoirs
Not applicable to this site

The "Reservoir Flood Mapping for Emergency Planning" viewer is now available on-line to the public at the Dfl external mapping portal
http://dfi-ni.maps.arcgis.com/home/index.html

Under the terms of Schedule 6 of the Drainage (Northern Ireland) Order 1973 the applicant must submit to Dfl Rivers, for its consent for any proposal to carry out works which might affect a watercourse such as culverting, bridging, diversion, building adjacent to or discharge of storm water etc. Failure to obtain such consent prior to carrying out such proposals is an offence under the aforementioned Order which may lead to prosecution or statutory action as provided for.

I trust you find the foregoing to be helpful but should you require any further information or clarification please contact me at the above address.

Please quote our reference number above on any future correspondence.

Yours faithfully,

Gordon White

INVESTORS IN PEOPLE

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

Dfl Rivers Planning Advisory Unit

44 Seagoe Industrial Estate
CRAIGAVON
Co. Armagh
BT63 5QE
Tel: 028 3839 9118

Cathy M^{c}Keary
Causeway Coast and Glens District Council
Local Planning Office
County Hall
Castlerock Road
Coleraine
BT51 3HS

Your ref:
LA01/2017/1107/DETEIA
Our ref: IN1-17-40299

27th September 2017

Dear Madam,

Re: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm. Rigged Hill Windfarm, Limavady.

In response to your consultation dated 12th September 2017 requesting an opinion as to whether the proposed development would or would not be EIA development.

Dfl Rivers remit is limited to commenting on flood risk and drainage matters in accordance with planning Policy Statement 15 Planning and Flood Risk (PPS 15). It is outside Dfl Rivers area of expertise to express an opinion as to whether the proposed development would or would not be EIA development. If the planning authority deems that an EIA is required then paragraph 5.8 of PPS 15 requires that flood risk and drainage assessment are addressed in the Environmental Statement.

I trust you find the foregoing to be helpful but should you require any further information or clarification please contact me at the above address.

Please quote our reference number above on any future correspondence.

Yours faithfully,

Andrew Minihan

Dfl – Roads, Northern Division
Network Planning

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

Cathy McKeary
Causeway Coast & Glens
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

County Hall
Castlerock Road
Coleraine BT51 3HS
Tel: 028 7034 1421
Fax:

Planning Authority Case Officer:	Cathy McKeary
Planning Application Ref:	LA01/2017/1107/DETEIA
Date consultaion received:	13th September 2017
Date of reply:	20th September 2017

Location: **Rigged Hill Windfarm, Limavady**

Proposal: **Scoping opinion request for the proposed repowering of Rigged Hill Windfarm**

Scoping Report received 13th September 2017 refers.

Dfl will require a Traffic and Transportation chapter to be included within the proposed Environmental Statement. This chapter should include a Transportation Assessment and should address issues of Haul Routes for all vehicles that will be attracted to the site during construction, installation and maintenance of the development.

Dfl Roads has no further comment to make at this time.

Dfl Roads Case Officer: Victor Sinclair
Development Control

Issued on behalf of the Divisional Roads Manager

DFI Roads

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

Network Planning
Northern Division

Co.Hall
Castlerock Road
Coleraine
BT51 3HS

Tel: 028 7034 1421

Causeway Coast and Glens
Local Planning Office

Planning Authority Case Officer:	Cathy McKeary
Planning Application Ref:	LA01/2017/1107/DETEIA
Date consultation received:	16th November 2017
Date of Reply:	6th December 2017

Location: Rigged Hill Windfarm, Limavady

Proposal: Repowering of windfarm

Email dated 16th November 2017 refers.

DfI Roads makes the following additional comments on the document entitled Rigged Hill Windfarm Repowering – Scoping Request (August 2017), chapter 10, Access, Transport and Traffic

- The Guidelines for the Environmental Impact of Road traffic do not apply in Northern Ireland. The Transport Assessment Guidelines for Development proposals in Northern Ireland (November 2006) apply in this jurisdiction.
- Haul routes should be assessed in terms of all proposed vehicle suitability, junction geometry, low bridges, weight restrictions, etc.
- DfI Roads is content with the proposed methodology and scope of the traffic and transportation assessment.
- Operational traffic effects can be scoped out of the assessment.
- We are not aware of any specific access restrictions or limitations in the vicinity of the site, however the developer should assess this as part of the Abnormal Load Route Assessment
- We do not hold any information on any other developments where there may be potential for any significant cumulative effects to arise.

DFI Roads Case Officer: Andrew Gillan
Network Planning

Issued on behalf of the Divisional Roads Manager

The direct, physical impacts on the development should be addressed, including:

- collision risk,
- direct land-take by structures including masts, buildings, roads, tracks, fences and drainage ditches,
- disruption of hydrology, in terms of saturation on the down-slope sides of roads, tracks and drying-out on the up-slope sides,
- the creation of sumps through built development, with consequent saturation and desiccation effects, and
- works associated with the construction of the development, including vegetation and soil/peat removal and storage, borrow pits, temporary compounds etc.

Disturbance effects could arise in each phase of the development – construction, operation and decommissioning. Possible causes of disturbance are noise, vibration, dust, and the physical presence of construction equipment, perhaps providing predator vantage points, and the presence of personnel associated with construction and site security. The RSPB's concern centres on whether disturbance factors would result in birds being forced to relocate to sub-optimal habitats.
Indirect impacts may include:

- agricultural intensification arising from the increased accessibility of the development site and surrounding areas to stock due to construction of roads and tracks.

Mitigation, enhancement and monitoring

Once sufficient information is available to conclude whether the development will have impacts on the site, adverse or otherwise, the ES should outline mitigation measures as appropriate.

The broad headings under which the RSPB would be keen to discuss mitigation (without prejudice) would be:

- institution of agricultural management and access regimes which favour important bird species through habitat management and possibly habitat creation,
- time-related restrictions on construction in relation to nesting periods,
- precise location and orientation of built development within the development site, and
- removal of some tracks/roads after construction.

Northern Ireland HQ
Belvoir Park Forest
Belvoir Drive
Belfast
BT8 7QT

Tel 02890 491547
Fax 02890 491669

rspb.org.uk

Causeway Coast and Glens
Local Planning Office
Cloonavin
66 Portstewart Road
Coleraine
BT52 1EY

08 November 2017

To whom it may concern,

RE: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm (LA01/2017/1107/DETEIA)

The RSPB is Europe's largest voluntary nature conservation organisation and is supported by over 1 million members, 13 000 of which reside in Northern Ireland (NI). As such we thank you for sending the above named consultation through to us for comment.

We note that the applicant has elected to undertake an Environmental Impact Assessment (EIA) without seeking a screening opinion from the Council. We would expect the EIA to provide sufficient information to allow an assessment of the impacts of the proposed development on the environment, in accordance with The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017[1].

RSPB NI is content with the scope of the habitat and bird surveys carried out as part of the EIA process though we note that two of the Vantage Point (VP) locations lie within the survey area. This is not usually recommended[2] in order to minimise the observer's effect on bird behaviour, however we do acknowledge that local topography can sometimes make obtaining effective VPs difficult.

RSPB data can be requested here.

Analysis

The Environmental Statement (ES) must provide an assessment of the possible impacts of the development on the interests described by the surveys. These possible impacts should include *inter alia* direct impacts, effects due to disturbance and indirect impacts.

[1] Planning Regulations
[2] Scottish Natural Heritage (SNH) Guidelines

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Patron: Her Majesty the Queen **Chairman of Council**: Professor Steve Ormerod, FIEEM **Chief Executive**: Dr Mike Clarke **Regional Director**: Joanne Sherwood
The Royal Society for the Protection of Birds (RSPB) is a registered charity: England and Wales no. 207076, Scotland no. SC037654

giving nature a home

The RSPB advocates *no loss of biodiversity* to development, through appropriate mitigation and compensation where necessary. Finally, we would encourage suggestions on enhancing the biodiversity of the development site and its vicinity and would welcome the opportunity to discuss such concepts with the developer.

Both mitigation and enhancement may happen on or off-site. This can be facilitated through the local community or local landowners and can benefit local biodiversity whilst also providing services such as carbon storage or improved water quality[3].

Monitoring should take place for all relevant species found on site (informed by the surveys). The "Before After Control Impact" approach should be used to add rigour to the process. The RSPB is of the opinion that survey and monitoring results should be published, in order to enhance understanding of the relationships between windfarms and biodiversity.

We reserve the right to make further representations in relation to this matter and if you require further information in relation to issues raised in this letter, please do not he sitate to contact the Assistant Conservation Officer.

Yours sincerely

Assistant Conservation Officer
RSPB Northern Ireland

[3] Futurescapes

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Date: 18/01/2018

Planning Reference: LA01/2017/1107/DETEIA – EIA Reg 10 consultation

Location: Rigged Hill Windfarm, Limavady

Proposal: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

Consultation:

This proposal will be subject to the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). As such a Habitats Regulation Assessment (HRA) is required to be completed for any planning permission applied for.

Outcome:

SES do not hold site specific data at the required resolution to inform the Environmental Statement.

However, given the nature/location of the proposed development as set out in Scoping Request (August 2017), there is potential for impacts on European sites via hydrological linkages to Lough Foyle SPA/Ramsar, River Roe and Tributaries SAC, and potential for impacts on SPA ornithological features via displacement/collision risks.

SES, request that a shadow HRA is undertaken by the applicant in consultation with the Northern Ireland Environment Agency (NIEA), which as Statutory Nature Conservation Body (SNCB) for NI, is best placed to provide the necessary data/information as required.

The shadow HRA should be included as a stand-alone document or Annex to the ES and include findings/mitigation specific to European/Ramsar sites and features. The shadow HRA can of course reference the Ecology Chapter and other ES chapters. SES will review the shadow HRA on behalf of Causeway Coast and Glens Borough Council to ensure that the Council fulfils its obligations under the Habitats Regulations.

Advice for Planner:

Please inform the applicant accordingly.

sharedenvironmentalservice@midandeastantrim.gov.uk

Department of
Agriculture, Environment
and Rural Affairs
www.daerani.gov.uk

Planning Response Team
Klondyke Building
Cromac Avenue
Gasworks Business Park
Lower Ormeau Road
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BT7 2JA
Tel: 028 9056 9604
Email: planningresponse.team@daera-ni.gov.uk

Date:17 January 2018

Dear Sir/Madam

Planning Application Ref.:	LA01/2017/1107/DETEIA
Location:	Rigged Hill Windfarm Limavady
Proposal:	Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

Thank you for your consultation on the above which was received by DAERA on 12/09/2017

Our statutory duty is to ensure that the natural and historic environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.

We have reviewed the details of the application and would provide summary comments as follows:

Drainage and water
Water Management Unit are of the opinion that, based on the information presented, impacts on the surface water environment generated by this proposal are unlikely to be significant subject to best practice and appropriate mitigation being applied during the construction, operation and decommissioning phases. Inland Fisheries has noted the position of the proposed development and is satisfied that it is located within the Castle River catchment in the Loughs Agency area of jurisdiction.

Land, Soil and Air
Regulation Unit has provided scoping advice.

Natural Heritage and Conservation Areas
Natural environment Division (NED) considers there are likely significant environmental effects associated with the proposal over and above the existing baseline conditions of the operational wind farm at the site. NED is largely content with the approach to be taken, described in the scoping report, regarding designated sites, priority habitats, active peatland, protected and priority species, including bats and birds. However, we disagree with the intention to scope out some ecological issues and have a number of other comments which are detailed in the attached.

If you wish to discuss anything raised in our response, please do not hesitate to contact Planning Response Team (details above).

Kind Regards

Planning Response Team

On behalf of DAERA

Planning Reference No.: LA01/2017/1107/DETEIA

Section Reference: WMU/PC/ 28329-1

Baseline environmental information

Water quality baseline information can be obtained by sending a specific request to the following address: waterinfo@daera-ni.gov.uk

Likely significant environmental effects

Water Management Unit has assessed the information presented in this proposal within the context of Water Management Unit's remit of surface water quality issues.

Water Management Unit are of the opinion that, based on the information presented, impacts on the surface water environment generated by this proposal are unlikely to be significant subject to best practice and appropriate mitigation being applied during the construction, operation and decommissioning phases.

Water Management Unit's comments are subject to the relevant environmental authorisations being granted.

Environmental information required

Refer to:

- EIA Scoping Guidance for Developments Likely to Impact upon the Water Environment; https://www.daera-ni.gov.uk/publications/scoping-guidance-developments-likely-impact-upon-water-environment-eia
- Guidance for carrying out a WFD assessment on EIA developments. https://www.daera-ni.gov.uk/publications/guidance-note-carrying-out-water-framework-directive-assessment-environmental-impact

Further guidance

Water Management Unit would refer the applicant / agent to NIEA's full suite of Standing Advice Notes. The following Standing Advice in relation to the aquatic environment will be particularly relevant to this application:

- Standing Advice No 4. Pollution Prevention Guidance;
- Standing Advice No 5. Sustainable Drainage Systems;
- Standing Advice No 11. Discharges to the Water Environment;
- Standing Advice No 18. Abstraction and Impoundment;
- Standing Advice No 22. Culverting;
- Standing Advice No 23. Commercial and Industrial Developments;
- Standing Advice No 24. Pre-Application Discussion Advice.

(Standing Advice Notes are available on the NI Planning Portal www.planningni.gov.uk under Advice/NIEA Guidance.)

Water Management Unit would request that any future application clearly demonstrate the following:

- How any foul sewage (from compound) will be dealt with.
- How surface water will be disposed of during the construction phase of the development.
- Compliance with The Oil Storage Regulations.
- Clear details of any proposed works in, near or liable to affect a watercourse. Including the length and position of any proposed culverts.
- The application should clearly demonstrate compliance with all the relevant precepts contained in Standing Advice Note No.4 – Pollution Prevention Guidance.

If after scoping their proposal against the standing advice the applicant requires proposal specific advice then Water Management Unit will be happy to provide comment at that stage.

The following is the response of Inland Fisheries of the Department for Agriculture, Environment and Rural Affairs (DAERA) to this application.

Considerations:

The proposed development is within the Loughs Agency area of jurisdiction.

Explanatory Note:

Inland Fisheries has noted the position of the proposed development and is satisfied that it is located within the Castle River catchment in the Loughs Agency area of jurisdiction. Consequently, Loughs Agency should be consulted regarding potential impacts to inland fisheries.

Land, Soil & Air

Planning Reference No.: LA01/2017/1107/DETEIA

Section Reference: AE1/17/768699

Baseline environmental information

Information on private water supplies sourced from groundwater might be obtained from:

- Northern Ireland Environment Agency groundwater monitoring sites: contact waterinfo@daera-ni.gov.uk
- Abstraction & Impoundment Licensing: contact waterinfo@daera-ni.gov.uk
- Drinking Water Inspectorate: dwi@daera-ni.gov.uk
- Environmental Health section of the local council

Other observations

Section 11.2 of the scoping request was reviewed.
The site is located in the Magilligan (bedrock) groundwater body.

The applicant might wish to utilize detailed geological mapping (1:10,000 scale) available from the Geological Survey of Northern Ireland (www.bgs.ac.uk/gsni).

Likely significant environmental effects

The big foundations of wind turbines have the potential to impact on groundwater flow paths. Hence groundwater dependant receptors, including private water supplies, should be identified and potential impacts assessed. Where required mitigation measures should be identified.

Environmental information required

Water features survey including private water supplies.

Further guidance

https://www.daera-ni.gov.uk/publications/best-practice-guidance-documents

http://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/water_features_surveys.pdf

Natural Heritage

Section Reference: CB24959

Planning Reference: LA01/2017/1107/DETEIA

Date of NED response: 16 January 2018

Considerations

NIEA, Natural Environment Division (NED) acknowledges receipt of a Scoping Report, dated August 2017, for the repowering of the operational Rigged Hill Wind Farm and has considered its contents.

The proposal falls under Schedule 2 of the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 (the EIA Regulations).

Under Regulation 8 of the EIA Regulations Causeway Coast & Glens Borough Council have requested that NIEA provide an opinion as to whether the development would be EIA development, on the likely significant environmental effects of the proposal, and on the scope and level of detail to be provided in an Environmental Statement (ES) to be submitted with an EIA application.

NED would highlight that it is the sole responsibility of the planning authority to make a determination on whether or not a development constitutes 'EIA development', however, NED can provide the following information to help the Council in their determination.

NED considers there are likely significant environmental effects associated with the proposal over and above the existing baseline conditions of the operational wind farm at the site.

The proposal involves the erection of seven significantly larger turbines than those which are currently operating at the site and will include the construction of new access roads, hardstanding areas and associated infrastructure, including electricity cabling and grid connection.

The proposal has the potential to have significant effects on designated sites of nature conservation importance and important habitats and species.

The site is hydrologically linked to the River Roe and Tributaries Area of Special Scientific Interest (ASSI) and Special Area of Conservation (SAC) which are protected under the Environment (Northern Ireland) Order 2002 (as amended) and the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended) (known as the Habitats Regulations). These sites have been designated for their nationally and internationally important populations of Atlantic salmon (*Salmo salar*) and otter (*Lutra lutra*) and their nationally and internationally important habitats. There are potential significant effects on the site selection features from a degradation in water quality, including through mobilisation of sediments and polluted run-off, caused by decommissioning/construction activities and the modification of the existing hydrological regime.

The site contains Northern Ireland priority habitats and habitats listed on Annex I of the EU Habitats Directive which are likely to be lost or damaged by the proposals. These include heathland and blanket bog. The proposal is likely to result in additional loss of and damage to

these habitats through direct habitat loss from the footprint of new access tracks, hardstanding and other infrastructure, from damage and disturbance caused by construction activities and associated spoil storage, and through indirect effects on the hydrology of these habitats leading to habitat degradation.

The site is being used by bats, which are strictly protected under the Habitats Regulations. Research has highlighted that bats are susceptible to impacts from wind turbines through direct collisions with turbine blades, barotrauma, disorientation when in flight, and disturbance or displacement from foraging and commuting habitats. There is extensive evidence of bat mortality from collisions with turbine blades and barotrauma. The introduction of larger turbines with longer blade lengths is likely to significantly increase the risk of harm to bats using the site.

The site is being used by a number of bird species, including some species of nature conservation concern which are at risk of collision, disturbance and displacement from wind turbines. For example hen harrier, merlin and peregrine (EU Birds Directive, Annex I species) have been recorded within 2km of the site. Snipe, an amber listed Bird of Conservation Concern in Ireland (BOCCI), have also been recorded breeding within the site. The proposal also has the potential to result in the loss of breeding and wintering habitat for a range of bird species including Northern Ireland priority species.

The site may contain other priority species and/or protected species such as badgers, common lizard, protected under the Wildlife (Northern Ireland) Order 1985 (as amended), and Irish hare (NI priority species).

Finally, NED would highlight that the applicant has indicated their intention to voluntarily carry out an EIA *"given the scale of the development and the potential for significant effects to occur as a result of the development"*.

Assessment of Scoping Report / Scoping Opinion

NED is largely content with the approach to be taken, described in the scoping report, regarding designated sites, priority habitats, active peatland, protected and priority species, including bats and birds. In addition Page 26 of the report details some key questions for consultees which should be answered and NED would answer yes to all questions. However, we disagree with the intention to scope out some ecological issues and have a number of other comments which are detailed below.

Chapter 2 of the report states that it is not intended to assess the potential impacts of the future decommissioning of the wind farm as it is proposed to continue the 'in perpetuity' nature of the existing consent. However, if the Council are minded to impose a 25 year planning permission on this development, as is normal for all current wind farm approvals, then NED would expect to see a draft or outline Decommissioning Plan produced as part of the EIA process. This is in line with Planning Policy Statement 18: Renewable Energy and best practice guidance produced by Scottish Natural Heritage[1]. NED would highlight that the decommissioning of a wind farm has the potential to cause significant environmental effects which are additional to those caused during the

[1] Welstead, J., Hirst, R., Keogh, D., Robb G. and Bainsfair, R. 2013. Research and guidance on restoration and decommissioning of onshore wind farms. *Scottish Natural Heritage Commissioned Report No. 591*

construction and operational phases. NED would request clarification from the Council as to whether the proposal is likely to be granted planning approval in perpetuity as this has relevance for the assessment of significant environmental effects in the EIA.

Ecology

NED is largely content with the approach to be taken regarding designated sites, priority habitats, active peatland, protected and priority species, including bats. However, there are a number of concerns. Comments on the Ecology Chapter of the Scoping Report are detailed below.

It is proposed to scope out any further assessment of terrestrial mammals on the site. This is a concern considering the size of the developable area shown on Figure 2.1 of Appendix B of the report. In particular the site has the potential to support badgers. While NED acknowledges that the report states that no field signs of badgers have been observed to date no specific badger surveys appear to have been carried out and the general site walkovers described are unlikely to substitute for a detailed badger survey given the size of the developable area. Therefore, NED requires badger surveys to be scoped into the EIA and recommends that it also considers general mitigation measures for other terrestrial mammals known to be present on the site, including Irish hare, a Northern Ireland priority species.

NED agrees that the preliminary bat survey results appear to show low bat activity and is content with the proposed level of bat survey effort with the intention to extend the survey period if higher activity is found. NED is also content with the intention to assess activity in the context of onsite weather conditions and to include bat activity data recorded at height.

NED is content with the intention to scope out specific lizard surveys even though they are likely to be present on the site in low densities, as they are a highly mobile species. However, as the common lizard is a protected species under the Wildlife Order generic mitigation measures for this species should be discussed within the ES.

NED is content with the intention to scope out detailed assessments for amphibians, including the smooth newt, terrestrial invertebrates and protected or priority flora.

NED welcomes the intention to reuse existing access tracks and hardstandings where possible as this will minimise further loss of priority habitats. However, additional loss of blanket bog priority habitat is likely and the EIA will need to assess the significance of this and mitigate for any loss of or damage to priority habitats.

NED is content with the proposed assessment of habitats on the site, including active peatland. However, there are concerns that the scoping report refers to potential effects on, and loss of, small areas of active peat. NED would highlight that the planning policy in Northern Ireland regarding wind farms and active peatland is strict and unambiguous as the Strategic Planning Policy Statement for Northern Ireland (SPPS) states that *any renewable energy development on active peatland will not be permitted unless there are imperative reasons of overriding public interest*. In addition the applicant stated to NED at a meeting in May 2017 that their intention was to treat active peatland as a hard constraint on the site. Therefore, NED would expect to see every effort employed to avoid any impacts on active peatland on the site and if there are any potential

impacts to active peatland anticipated it would need to be demonstrated that these would be negligible.

NED welcomes the intention to compensate for impacts to peatland and priority habitat through a range of mitigation, compensation and enhancement measures and the intention to provide an outline Habitat Management Plan (HMP). This HMP will need to contain sufficient detail so that NED can be confident of its implementation and that it will adequately compensate for any damage caused to habitats. The aim of any compensation/enhancement measures must be to ensure no net loss of biodiversity on the site. The HMP should include the following:

a) Appropriate assessment and description of pre-construction, baseline habitat conditions;
b) Appropriate maps, clearly identifying habitat management areas;
c) Clear aims and objectives of proposed habitat management;
d) Detailed methodology and prescriptions of habitat management measures, including timescales and with defined criteria for the success of the measures;
e) Details of regular monitoring of habitat management measures using fixed quadrat locations and contingency measures should monitoring reveal unfavourable results;
f) Details of the production of regular monitoring reports to be submitted to the Planning Authority at agreed intervals;
g) Confirmation of landowner agreement with all habitat management measures.

NED is content with the proposal to adopt 50m buffers to all natural watercourses and 20m buffers to drains on the site, and the intention to re-use existing infrastructure, including watercourse crossings, where possible. NED is content with the proposal to scope out direct effects on fisheries interests within the site boundary and to scope in indirect effects on fisheries interests outside the site boundary within the EIA.

A summary of NED's issues/concerns is presented below:

- Sufficient information must be presented within the EIA to demonstrate negligible impacts on active peatland; direct and indirect, temporary and permanent effects on habitats should be assessed.
- Badgers should be scoped into the EIA.
- Generic mitigation measures should be provided for the common lizard for potential impacts during the construction phase.

Ornithology

A programme of bird surveys has been carried out during 2014/15, as agreed with NED. These have been supplemented by further surveys during 2015 and 2016/17. The survey programme has covered the entire year using approved methodology. Breeding season surveys, including specialised surveys for priority species, were carried out between March and August and included both walk-over surveys and vantage point observations. Similar methods were used to cover the non-breeding period between September and February. Supplementary vantage point watches were undertaken during spring (January to April) and autumn (September to November) migration periods.

Breeding season walk-over effort totalled 24-36 hours per month, while similar surveys in winter required 6-9 hours per month. Basic walk-overs in the breeding season extended to a radius of

800m from the site boundary. Winter walk-overs used a radius of 500m. Specialist surveys for breeding raptors and Curlew covered a 2km radius. A similar survey area was used for foraging/roosting Whooper Swans and geese in winter.

Vantage point observations totalled 36 hours per point in both the breeding season and winter. Four points were used in both seasons. The migration period watches were carried out from additional single points and also accumulated 36 hours of observation from each point.

Walk-over surveys recorded 52 species during the breeding season and 43 species during winter. A total of 14 target species were observed during vantage point watches in the breeding season and 14 species in winter. Vantage point watches during the migration periods detected seven target species in spring and eight in autumn.

No Hen Harriers (EU Birds Directive: Annex 1) were recorded breeding within the 2km survey zone and all flights by this species observed from vantage points were below 25m in height. However, two pairs of harriers were present in the wider area and a pair of Merlins (EU Birds Directive: Annex 1) occurred within 500m of the development site during the breeding season. Other raptor species that bred within a 2km radius included Buzzard, Sparrowhawk (BOCCI amber-listed) and Kestrel (BOCCI amber-listed). None of these nested within the 500m buffer zone, however. Hen Harrier, Buzzard, Peregrine (EU Birds Directive: Annex 1) and Kestrel were also recorded within 2km in winter. Two Hen Harrier winter roost sites were located within 2km. The maximum number of individuals using either of these was three. A significant Raven roost was also found within the 2km survey zone during winter.

No Curlew territories were detected within 2km. Several Snipe (BOCCI amber-listed) territories were located within the survey zone, the majority within the existing windfarm. This suggests some degree of habituation by the species despite it being considered to be of risk of displacement within 400m of windfarms (Pearce-Higgins et al 2009, 2012)[2]. The site also supported Snipe in winter.

Winter surveys found no foraging or roosting Whooper Swans or Greylag Geese (both selection features of the Lough Foyle Special Protection Area (SPA)) within a 2km radius of the development site. Flights by these species were detected within the 500m buffer zone but, in all cases, these were at relatively high altitude.

On the basis of the above surveys, the developer has identified the following as principal issues of initial concern regarding birds:

- Impact on breeding Merlins
- Collision risk to Peregrine
- Possible collision risk to Greylag Geese (depending on height and layout of new turbines) and possibly to other selection features of the Lough Foyle SPA, especially Whooper Swan and Golden Plover (Red-listed)
- Presence of Hen Harrier roosts in the wider area

[2] Pearce-Higgins, J.W., Stephen, L., Douse, A. & Langston, R.H.W. (2012) Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 49: 386-394.

- Displacement risk to Snipe
- Potential impact on selection features of the Antrim Hills SPA (Hen Harrier and Merlin)

On the basis of the survey results, the developer is of the opinion that significant risk due to the following issues can be scoped out:

- Displacement of breeding Curlew – none recorded within 2km. Displacement of breeding Snipe and Red Grouse – based on evidence of habituation on site and sensitive timing of construction
- Significant risk of collision or displacement to Whooper Swans and Greylag Geese – all observed flights at relatively high altitude, but may need to be considered if new turbines are greater than a critical height. No foraging or roosting by these species within 2km
- Collision risk to migratory Golden Plover (Red-listed) – based on published evidence regarding avoidance behaviour and low numbers of collision records generally

Constraints on the development arising from the survey results will be taken into account in the design of the revised layout of the site. Factors identified as requiring to be addressed at the design stage include:

- Modelling of collision risk to Peregrines
- Modelling of displacement risk to Snipe
- Analysis of the impact of the project footprint on breeding passerines
- Assessment of the collision risk to all species recorded flying through the 500m buffer zone.
- Possible requirement to model collision risk to Whooper Swans and Greylag Geese (dependent on turbine height)

NED is satisfied that the scoping report has covered all salient ornithological issues and that a sufficiently extensive and robust dataset has been collected to allow the impact of proposed development on the local bird community to be adequately assessed. On the basis of the evidence presented and given that a windfarm has operated on this site for several years without any indication of a significant adverse effect on bird populations, we are content that those factors identified by the developer as not requiring further analysis can safely be screened out and that the final assessment should be based principally on the design response to the issues listed above.

However, it is recommended that an assessment is made of the collision risk to Ravens using the nearby winter roost and that the revised layout takes into account regular Raven flight lines to and from the roost.

NED also notes that the presence of Merlins in the vicinity of the windfarm during the breeding season is highlighted under "Key Sensitivities" in the Scoping Report (Section 7.4) but this concern is not subsequently listed as either "scoped in" or "scoped out". If the potential risk to Merlins is considered as being scoped out, clear reasoning for this decision should be given.

The Environmental Statement for this project should include a habitat management plan for the site with particular emphasis on the maintenance of Snipe habitat within the windfarm footprint.

Natural Heritage

Hydrology, Hydrogeology, Geology, Soils and Peat

NED is content with the approach and methodology to be followed regarding assessment of impacts to hydrology, hydrogeology, geology, soils and peat. NED agrees that the most relevant guidance and policy has been identified and this should be followed.

NED welcomes that dipwells have been installed at 30 locations across the site to monitor near surface water levels within the peat. These will be monitored at regular intervals under a variety of conditions and the results will inform the assessment of potential hydrological effects on the peat resource.

A phase 1 peat study has already been carried out which has involved extensive peat probing and the recording of environmental and physical characteristics of the peat with a view to assessing active peat area. This will be followed up by a Phase 2 study, following the design of the layout, which will include a greater frequency of peat probing in key areas.

NED is content that an outline Peat Management Plan (PMP) will be prepared, if necessary. This would depend on the volumes of peat anticipated to be excavated. In any case NED would expect many of the issues which would normally be covered within a PMP to be addressed in a Construction and Environmental Management Plan (CEMP) – e.g. spoil storage, site reinstatement.

Further Information

NIEA Standing Advice can be found at:
http://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice.htm and;

NED survey specifications and other planning related advice can be found at: https://www.daera-ni.gov.uk/articles/site-surveys

NED recommends that all survey works comply with British Standard 42020:2013, which came into effect on 31 August 2013. The British Standard provides recommendations and guidance for those engaged in planning and development, whose work might affect or have implications for conservation, or the enhancement of biodiversity.

The DAERA website https://www.daera-ni.gov.uk/ includes:

- Details of all regional, national and international designated sites in Northern Ireland
- Northern Ireland Biodiversity Strategy
- Northern Ireland Habitat and Species Action Plans
- Areas of Outstanding Natural Beauty
- Landscape Character Areas
- Environmental Legislation

Natural Heritage

NIEA have also produced an online GIS based map viewer showing the location of important natural environment areas including; NIEA protected areas and NIEA surveyed priority habitats and species which can be found here:
https://www.daera-ni.gov.uk/services/natural-environment-map-viewer

Information on the flora, fauna and geology of Northern Ireland can be obtained from the Habitas website: http://www.habitas.org.uk/

Site specific environmental data (e.g. species records) can be obtained from the Centre for Environmental Data and Recording (CEDaR). These can be accessed by contacting CEDaR, National Museums NI, 153 Bangor Road, Cultra, Holywood, BT18 0EU. Website:
http://www.nmni.com/cedar

NED promotes the submission of biodiversity data to CEDaR, and recommends that species records generated as part of the EIA process are submitted to CEDaR by going to:
http://nmni.com/CEDaR/Submit-records

General Scoping Guidance for Environmental Impact Assessment

Guidance on the scoping stage of Environmental Impact Assessment (EIA) and on the information to be included in an Environmental Statement (ES) is provided by the European Commission and can be found at: http://ec.europa.eu/environment/eia/eia-support.htm.

NED recommends "Guidelines for Ecological Impact Assessment in the UK and Ireland" produced by the Chartered Institute of Ecology and Environmental Management (CIEEM). This provides best practice guidance for assessing the ecological impact of plans and projects. The document can be downloaded from:
http://www.cieem.net/data/files/Publications/EcIA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf

NED would emphasise the following:

- The ES should describe both habitats and species of flora and fauna present. It should cover both the proposed site and the surrounding area. It should include any designated sites and protected species which may be affected.
- Proposals which may impact on a European site, however distant (i.e. Special Areas of Conservation and Special Protection Areas), will require a Habitats Regulations Assessment (HRA). Sufficient information must be provided to the competent authority to enable them to complete this.
- The topography, geology, soils and water environment of the site and surrounding area should be described.
- The ES should include a description of the likely significant effects, both positive and negative, at all stages of the development to include direct, indirect, secondary and cumulative effects in the short, medium and long term. A description of the forecasting methods used to predict these effects should also be included.

Natural Heritage

- A description of proposed measures to prevent, reduce or offset any significant adverse effects on the environment (i.e. Avoidance, Mitigation, Compensation, and Enhancement) must be included.
- An indication of any difficulties encountered during the EIA process, limitations of surveys and any uncertainties in the data must be included.
- The different chapters of the ES should be inter-related and the ecology chapter should be cross referenced where appropriate.

Flora and Fauna

- The ecological baseline of the site must be characterised. Following from this, the extent and nature of any further survey work that may be required should be identified. Surveys must cover flora and fauna present in all seasons.
- A habitat survey (i.e. JNCC Phase 1) should be carried out to map the habitats on site and identify areas which are likely to be of high nature conservation value or particularly vulnerable to impact from the proposed development. Areas thus identified should be subject to more detailed survey, i.e. National Vegetation Classification (NVC).
- Faunal surveys should include a full breeding bird survey and protected species surveys. The timing of surveys is critical and they must be carried out at appropriate times of year.
- Surveys should highlight any Northern Ireland or European priority habitats and species which may be present on the site or surrounding area.
- Baseline surveys conducted over a short period may not identify long term trends and reference should be made to previous records.
- Protected species surveys should be carried out to NED specifications. Note that these maybe updated in the light of new knowledge at any time. Therefore it is advised to check the NED website for the most up to date specifications immediately prior to commencement of surveys.
- Full survey reports should be included in the appendix of the ES. All maps and diagrams should be of an appropriate scale for interpretation.
- NED reserve the right to determine whether the survey information submitted is adequate or when additional information is required.
- Survey information regarding species vulnerable to persecution should be included as a confidential annex to the ES, which should not be made publically available. The species of concern are badgers *(Meles meles),* freshwater pearl mussels *(Margaritifera margaritifera),* goshawks *(Accipiter gentilis),* hen harriers *(Circus cyaneus),* and peregrines *(Falco peregrinus).*

Landscape

NIEA may need to comment on proposals with the potential to significantly affect an Area of Outstanding Natural Beauty (AONB). The landscape chapter of the ES should:

- Establish the current landscape designation and policies covering the site and its surroundings.
- Assess the direct effects on landscape and public perception of change.
- Describe the landscape character of the site and its surroundings.
- Describe where the potential zone of theoretical visibility for the development and its associated infrastructure will extend to, including combination effect with established development.
- Establish the potential key landscape issues and the areas requiring further investigation during the baseline studies (See '*Guidelines for Landscape and Visual Impact Assessment*', The Landscape Institute and the Institute of Environmental Management and Assessment. London 2013).

Water and Hydrology

- A description of the water environment of the area - running and static surface waters, groundwaters, estuaries, coastal waters and the sea, including run-off and drainage.
- A description of the hydrology, water quality and use of any water resources that may be affected by the development (e.g. water supply, fisheries, angling, bathing, amenity, navigation, effluent disposal).
- The consequences of changes to the hydro-geological system of the area on peatland, rivers, streams, flushes and wetland habitats should be described.

Mitigation Measures

A description of the measures proposed to prevent, reduce or offset any significant adverse effects on the environment caused by the development must be included in the ES. These measures can be summarised as:

- Avoidance: Priority should be given to avoiding negative impacts, especially those that could be significant. Consideration should be given to alternative strategies or locations, changes to the project design and layout, changes to methods and processes, changes to implementation plans and management practices including regulating the timing of activities.
- Mitigation: Opportunities should be sought, wherever possible, to reduce negative impacts on the environment, ideally to the point where they are no longer significant.
- Compensation: Where avoidance or mitigation of negative impacts is not practicable measures to compensate for impacts should be proposed.

- Enhancement: Opportunities should be sought in every new development to deliver net ecological gain rather than just limiting environmental damage. Enhancement measures may lead to an increase in the biodiversity of a site.

Mitigation measures should be incorporated into the design of a project from the outset and included on plans and drawings where appropriate. Mitigation which simply comprises a list of recommendations will generally not be acceptable.

Other recommendations include:

- A description of the criteria used to establish the magnitude and significance of environmental impacts. A tabular presentation should be used to summarise key direct and indirect impacts.
- The mitigation proposed should be clearly described and its effect on the magnitude and significance of these impacts should be assessed and clearly explained.
- Any uncertainty in the effectiveness of proposed mitigation measures should be explained and, where appropriate, evidence should be provided of successes from other similar projects.
- The implementation of proposed mitigation should be clearly described and, if necessary, arrangements for monitoring the implementation and success of mitigation measures should be stated.

Construction and Environmental Management Plan

A Construction and Environmental Management Plan (CEMP) should be produced to detail the construction phase of the project and the implementation of the mitigation measures described in the ES. It will provide the management framework for the planning and implementation of construction activities and describe how working practices will avoid or minimise impacts to the environment at all stages of the development. It should provide details of procedures for monitoring and reporting the environmental effects of the development during construction. It should include the following information:

- Pre construction site conditions should be described to establish a baseline against which construction effects can be assessed.
- A site plan to show the location of construction activities, access routes, the storage of materials, the position of plant and the location of any sensitive receptors (e.g trees, peat, watercourses).
- A detailed programme of the work to be carried out including timing and sequencing of works.
- Methods of construction and working practices should be specified, including equipment and materials to be used.
- Details of how mitigation measures will be implemented should be clearly stated.
- Details of procedures for monitoring and reporting the environmental effects of the development during construction and in the operation phase.

Natural Heritage

Habitat Management Plan

A Habitat Management Plan (HMP) should form part of the ES. This should show how the habitats, flora and fauna of the site will be protected during and after construction. It should also include a long term plan for the management of the site for nature conservation and, if appropriate, show details of compensation or enhancement measures, such as habitat restoration and creation.

Habitat restoration and creation measures must be carefully considered and a rationale provided for the choice of measures. Techniques for habitat restoration and creation must be detailed, site specific and follow current best practice. Evidence should be provided which shows that the proposed measures have a reasonable likelihood of success. If proposed techniques are unproven then a more detailed description and rationale for their use will be required. Proposed measures must have clearly defined criteria for success so that they can be adequately measured and monitored.

The HMP should include a long term monitoring plan, detailing how the ecology of the site will be monitored to demonstrate the success of any proposed mitigation, compensation or enhancement measures. The monitoring plan must span an appropriate time frame depending on the type of development, the habitats and/or species being monitored, and the likely timescales of any habitat restoration or creation measures. The monitoring plan must include measurable targets and details of contingency measures should monitoring reveal unfavourable results.

Consideration must be given to the long term ecology of the site at the end of the lifetime of the development. For example, it may not be appropriate to leave infrastructure, such as access tracks, in place where sensitive habitats are present when this could lead to the long term degradation of these habitats. Issues such as these must be adequately addressed within an appropriate Decommissioning and Restoration Plan.

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BT42 1QF

Date: 02/10/2017

Planning Reference: LA01/2017/1107/DETEIA

Location: Rigged Hill Windfarm, Limavady

Proposal: Scoping opinion request for the proposed repowering of Rigged Hill Windfarm

Shared Environmental Service (SES) has reviewed the Scoping Request document dated August 2017 submitted with the consultation.

This proposal will be subject to the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). As such a Habitats Regulation Assessment (HRA) is required to be completed for any planning permission applied for.

SES do not hold any additional data/information that may be included within the Environmental Statement. As noted within the Scoping Request document there is potential for impacts on the site features of River Roe and Tributaries SAC and Lough Foyle SPA/Ramsar.

SES will review the Environmental Statement and any other documentation to inform the HRA on behalf of Causeway Coast and Glens Borough Council to ensure that the Council fulfils its obligations under the Habitats Regulations.

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Rigged Hill Windfarm Repowering

Technical Appendix A2.3: List of Cumulative Sites

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www.scottishpowerrenewables.com

SCOTTISHPOWER RENEWABLES

A2.3 List of Cumulative Sites

Table A2.3.1 Windfarm Sites Within 30km

Windfarm Name	Planning Reference	Status	No. Turbines	Tip Height
Altahullion I	B/2000/0118/F	Operational	20	80
Altahullion II	B/2004/0795/F	Operational	9	80
Ballyhanedin	A/2014/0630/F	Consented	8	126
Barr Cregg	A/2012/0401/F; 2015/A0102	Appeal	7	125
Brockaghboy	C/2007/1186/F	Operational	15	125
Brockaghboy Extn.	H/2014/0241/F	Operational	4	125
Cam Burn	C/2011/0459/F	Consented	6	120
Cloonty	LA01/2015/0060/F; E/2013/0158/F	Operational	4	110
Corlacky Hill	LA09/2016/0232/F	Application	11	150
Craiggore	B/2012/0268/F	Consented	10	125
Croaghan	C/2011/0158/F	Withdrawn	5	120
Draperstown (Brackagh)	H/2009/0075/F; H/2011/0495/F	Operational	3	110
Dunbeg	B/2007/0560/F	Operational	14	125
Dunbeg Extn.	LA01/2016/0061/F	Consented	3	120
Dunbeg South	LA01/2018/0200/F	Application	9	149.9
Dunmore	B/2007/0563/F	Operational	7	125
Dunmore Ext	B/2013/0241/F	Consented	8	126
Eglish Mountain	A/2005/0223/F	Operational	6	107
Evishagaran	B/2013/0120/F; LA01/2018/1151/F	Consented	14	140
Garves	D/2003/0329/F; D/2008/0331/F	Operational	5	125
Glenbuck II	D/2006/0599/F; D/2015/0011/F	Operational	3	109
Glenconway	B/2011/0080/F B/2011/0223/F B/2010/0448	Operational	20	115
Long Mountain	D/2006/0104/F	Operational	12	100
Monnaboy	A/2009/0868/F	Operational	4	121
Monnaboy Extension	LA11/2015/0651/F	Withdrawn	2	125
Slieve Kirk	A/2004/1130/F	Operational	12	106.2
Smulgedon	B/2009/0070/F	Under Construction	7	120
Three Trees	16/51334 (Donegal)	Consented	2	119
Upper Ballyrogan	C/2012/0276/F	Consented	5	120

Table A2.3.2 Single turbines greater than 50m to blade tip

Turbine address	Planning Reference	Status	No. Turbines	Tip Height
Ballyavelin Road (61)	B/2012/0177/F	Operational	1	55
Belraugh Road (20)	C/2014/0417/F	Refused	1	79
Belraugh Road (25)	C/2013/0489/F	Consented	1	61
Belraugh Road (37)	LA01/2015/0255/F	Refused	1	54.75
Betts Road (28)	B/2011/0159/F	Operational	1	54.5
Cam Quarry	C/2015/0113/F	Consented	1	76
Churchland Lane (20)	C/2014/0097/F	Operational	1	54
Cloghan Road (16)	LA01/2016/0013/F	Consented	1	55
Craig 1	G/2013/0393/F	Consented	1	126
Craig 2	LA02/2015/0657/F	Consented	1	126
Craigmore Road (121)	C/2012/0464/F	Consented	1	55
Drumhappy Road (31)	LA01/2015/0670/F; B/2011/0063/F	Consented	1	59.5
Dunbeg Quarry	B/2011/0201/F	Consented	1	61
Glenbuck	D/2005/0628/F; D/2012/0042/F	Operational	1	120
Islandranny Road	LA01/2018/1267/F	Application	1	77
Kilhoyle Road (60)	B/2012/0290/F	Operational	1	55
Magherafelt	H/2009/0420/F	Operational	1	102
Peters Road (27)	LA01/2015/1005/F	Withdrawn	1	85
Temain Road (37)	B/2014/0221/F	Consented	1	58.5

Table A2.3.3 Single turbines less than 50m to blade tip

Turbine address	Planning Reference	Status	No. Turbines	Tip Height
Belraugh Road (7)/1	C/2011/0041/F; C/2009/0088/F	Operational	1	46
Craigmore Road	C/2011/0091/F	Operational	1	42.3
Craigmore Road (146)	C/2011/0240/F	Consented	1	47

Turbine address	Planning Reference	Status	No. Turbines	Tip Height
Edenmore Road (67)	B/2005/0372/F	Operational	1	25
Greenhall Highway (60)/1	C/2013/0086/F	Operational	1	46.5
Greenhall Highway (60)/2	C/2012/0414/F	Operational	1	46.5
Legavallon Road (132)	B/2011/0181/F	Operational	1	45
Legavallon Road (247)	C/2010/0442/F	Refused	1	45
Mill Road (26)	B/2011/0211/F	Consented	1	26.5
Ringsend Road (84)	B/2006/0395/F	Consented	1	45
Seacoast Road (16)	B/2012/0336/F	Operational	1	45
Terrydoo Road (34)/1	B/2013/0258/F	Operational	1	45
Terrydoo Road (34)/2	B/2013/0041/F	Operational	1	45
Tirkeeran Road	C/2011/0164/F	Operational	1	46